

Ulf-Daniel Ehlers

# Open Learning Cultures

A Guide to Quality, Evaluation, and  
Assessment for Future Learning



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Ulf-Daniel Ehlers  
Baden-Wuerttemberg Cooperative State University  
Stuttgart, Germany

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*To my sister Barbara who with  
her life instilled an ever burning light in us all  
and to Joshua who carries it forward*



# Preface

This book is about two topics, the fast change of learning in the open-learning worlds of Web 2.0 which I refer to as open-learning cultures and quality development and assessment for those open-learning worlds and landscapes. When I started out to draft the first chapters, two things became apparent to me: First, I noticed that indeed we have arrived at fast changing learning cultures and that every month brought about new aspects to my topic which I strived to integrate and which expanded the scope. Many issues I feel are barely enough elaborated for their actual and emerging importance. Second that a great variety and diversity of learning cultures exist, which expresses in manifold learning designs and in the emergence of open-learning landscapes, and also the discourse about the topic has a great diversity of actors, in parts deviating terminology and fashions. Therefore, I decided to add to the original plan to publish a book on quality and assessment—two already broad themes—the chapters on learning in a Web 2.0 world, open-learning cultures, and learning with peers in networks.

Assessment and Quality are amongst the topics which are hotly debated and extremely important to educators today. While much of the reality of assessment is (still) tied to formal learning scenarios in higher education institutions, we can see that higher education institutions' teachers more and more are bound to recognize also informal learning processes and networks of their students, moving ahead to new and more open-learning cultures. Many are embracing this fact already as a naturally given reality, as many case studies in the book show. It is, however, not evident and often not easy to create assessment concepts for open-learning cultures which allow recognition of informal learning influences into institutionalized learning worlds. The open-learning cultures are drastically opening the learning process to influences beyond the classroom and the institutional context and merge private, informal learning, the benefits of open knowledge, and publicly available content with traditional formal and often institution-bound learning processes. Open-learning cultures are challenging the old and long practiced pathways of our practice as educators. They are often characterized through elements of open-learning architectures and transform learning into a more student driven and self-responsible learning, using technology to connect resources, students, and teachers



in a new way. I also like to think of them using the metaphor of learning ecologies due to the fact they have an evolving and emerging nature which is composed of many interdependent parts, beyond traditional classrooms borders stretching into the family, private life and activities, or professional contexts, and all together building the ecology in which learning is embedded. In these open-learning ecologies, assessment has the function of moving closer to the actual learning experience itself and is a tool for learners to determine their own progress, learning needs, and next steps. Evaluation criteria are negotiated with peers and facilitators or learning coaches and assessment and evaluation become integral parts of learning themselves. But how to deal with these so dynamic and individual processes of evaluation and assessment?

After a phase of divergence and polarization, we can see now that a new form of blended learning is evolving. Blended learning here means not only that technology is enhancing the learning environment but also that blended forms of quality development, of blending formal and informal learning, and of self- as well as peer assessment are evolving more and more. Open learning is displaying a new *mélange* of contexts and elements. This book is a contribution to understand better the challenges we are facing when creating assessments for new and more open-learning cultures, how open-learning landscapes, open-learning ecologies look like, and how, as educators in higher education institutions, we can still get to terms with quality development and assessment.

The motivation to publish this book has its origins in numerous discussions during the last few years that I had the opportunity to hold with colleagues from all over the world. They took place during many international research projects and conferences related to learning technologies, as well as in higher education institutions meetings and in policy seminars, and they were triggered by the fundamental changes visible through integration and adoption of technologies into all areas of teaching and learning. I would like to thank everybody who contributed to this often critically discussed topic which is—sometimes—splitting the community into two—the skeptics and believers. Between both communities there are large plains of consensus, some sharp hills of disagreement, and many valleys of fruitful learning opportunities. To all those colleagues whom I had the chance to work with in international research and development projects, from Europe, Africa, Latin America, and Asia, and which contributed in their own ways to this book, I wish to express my gratefulness for their open minds, their willingness to share, and contribute to a more global vision of learning.

To my wife Virginie I would like to say thank you for being a critical friend in many discussions and also for allowing me to take time for such an isolated activity of writing a book. And to my little son Joshua who is already and will be in the future an active inhabitant of these new open-leaning landscapes.

Stuttgart, Germany  
July 2013

Ulf-Daniel Ehlers

# What Can You Expect?

●	Introduction
●	Discovering the Power of Social Media: The Next Generation Learning Tools
●	Emerging Learning Landscapes: Transforming Education
●	Community Based Learning Ecologies: Peers and Networks
●	Quality for new Learning Landscapes
●	Assessment for New Learning Landscapes



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# Chapter 1

## Introduction: An Avalanche Is Coming

An avalanche is coming. It will hit higher education institutions and change completely the nature of their organization, profile, and mission. The avalanche has started already on the top of the mountain and finds its way downward. You don't see it but it is moving faster and faster with great force underneath the surface. If you are experienced with avalanches you know that it will hit but you don't know when, and if you are experienced with higher education you know why: Universities are giving away knowledge for free. More and more higher education institutions are opening up, in their business models, in their leaning designs, and in their access regulations. A huge pressure on the classical twentieth century university is building up because its unique selling point—to be producers and shepherds of knowledge—no longer holds differentiating power when knowledge is made available for everybody for free. When knowledge is available, one of the important future tasks of universities will be to give orientation about quality and to organize certification and assessment. The intention of this book is to lead the way to these horizons and discuss new emerging and more open forms and methods of quality development and assessment.

Open Learning has a long tradition. Since the days of Célestin Freinet and Maria Montessori, the idea of open learning has grown to become the reality of many of today's higher education institutions in new ways and a variety of shapes and forms. In constructivism and connectivism the concept has been reflected anew and profoundly and through technology has gained an unprecedented power. Technology has played the role of catalyzing learning scenarios into more self-determined, independent, and interest-guided learning. A sphere of new open-learning cultures is emerging which is both empowering higher learning and challenging institutions, teachers, and learners at the same time. In higher education institutions, open-learning cultures are no longer visions of a distant future, but everyday reality for more and more students. E-learning is moving out of its zone of experimentation and gaining room while comprising online tools such as blogs, wikis, or podcasts for learning and teaching. Learners can create their own contents and exchange information in networks like the video platform YouTube: Download a lecture off the seminar Web page as a podcast in the morning, take part in an online session of

an international studying group for the purpose of preparing for an exam in the afternoon, and log into the virtual world of Second Life to take part in a tutorial relating to the morning's lecture—the daily routine of studying looks like this or similar more and more often.

To support learning today, higher education institutions must be able to do more with less yet still plan to meet the challenges of open-learning cultures. Higher education institutions today are expected to be more than just the physical spaces where learners meet lecturers. Students expect them to be learning spaces or learning landscapes. Because of the profound nature of change in learning styles, organizations, methods, tools and technologies, forms of participation and interaction, and globalization we refer to the change as being a change of cultures. Open-learning cultures are at the same time constituting element and characteristic of transformed learning environments which we refer to as landscapes in higher education institutions. When the focus of attention shifts from content to learning activities and human interactions around content and peers, social learning and evolving communities of practice will enrich future learning. Campus need to create a participatory architecture for supporting these communities of learners, an architecture that can harness the power of both the existing physical place and the emerging virtual space. To conceptualize learning environment as landscapes brings metaphors to the world of learning which help to understand its ecologic nature. In this understanding, learning is not seen as something which is happening separated from the learner, just as an encapsulated part of his day-to-day activity but rather as something which is part of the ecology of their lives. It is bound to other areas of life and has natural connections, influences, and purposes. Just like in a view on a landscape's ecology it can be established that a certain balance of ecological factors has to be maintained. Learning is embedded into a permanently growing Web of experiences, activities, and practices and reflection is the main instrument of learners to transform experiences into knowledge, skills, and attitudes.

Many higher education institutions have today discovered this characteristic of learning and development. Higher education institutions' campuses all over the world are transformed into more open-learning spaces or learning landscapes and follow the metaphor of a learning ecology. Ecology is an environment that fosters and supports the creation of communities. The definition applied to gardening applies also to learning communities. Ecological gardening is about gardening with nature, not against it. Likewise a learning ecology is an environment that is consistent with—and not antagonistic to—how learners learn. John Seely Brown (1999) has written extensively on the concept of knowledge ecology. He defines ecology as an open system, dynamic and interdependent, diverse, partially self-organizing, adaptive, and fragile. His concept includes the following characteristics of a learning ecology:

- A collection of overlapping communities of interest
- Cross-pollinating with each other
- Constantly evolving
- Largely self-organizing

Learning ecologies can exceed these characteristics. However, in more and more formal education environments, the concept of self-organization takes the place of a more structured process of knowledge transmission. The instructor changes roles and takes on the role of a gardener. These developments are becoming even more important due to the constant changing environment in which higher education institutions are acting today—and for which they have to prepare their students. The repercussions of societal and industrial change, globalization, and the rise of information technology “...also referred to as the impacts and implications of the information age—have given rise to the perception that ‘*knowledge is the new economy*’” (Jackson 2002: 6), also illustrated by terms, such as information economy, knowledge-based economy, virtual economy, internet economy, or e-economy. New forms of organization that are based on networked communication media and network patterns have become a key characteristic of almost all economic sectors. In effect, the *half-life of information*, product lifecycles, and also employment relationships are shortening in time. All these aspects lead to a growing complexity which Botkin and Mahdi (1979) describe as “human gap.” To cope with it we can see a continuously rising importance of learning. Lifelong learning and informal learning (Cross 2007) accelerate the emergence of a learning society and organizations are on their way to become learning organizations (in the sense Peter Senge describes them in Senge 2006). Learners are required to learn faster, at a more efficient and constant rate, and about various, often unrelated topics, in order to meet the challenge of acquiring competencies in demand (Siemens 2004a; Downes 2005; Ehlers 2008). A learner’s capability of adapting to complex and dynamic contexts has become more important than its individual theoretical and practical store of knowledge (Cambra-Fierro and Cambra-Berdún 2006; Siemens 2004b; Westera 2001). Learners and educators are increasingly embracing learning as a part of a culture in their learning ecologies.

While teaching and learning is changing—is the definition of quality and the method used to develop or assess quality and learning also changing? In this book we will show how quality and assessment methods can be developed and applied to open-learning cultures. We believe that the described acceleration of learning is posing profound challenges to the way quality development has to be understood. The question how to define quality—and from which perspective—is anew urgent as well as open and cannot be answered in a general fashion but has to take into account the specific context and backgrounds in which quality is to be developed.

Technology-enhanced learning today has become a reality and is often diffusing into every form and kind of learning, be it presential (to enrich the classroom) or in a more distant mode. Social media are changing traditional learning designs and opportunities and are used more frequently today. Stephen Downes (2007) coined the term “e-learning 2.0” to describe the more frequent use of social media for learning and describes it with words such as “learner centered,” “immersive learning,” “connected learning,” “game-based learning,” “workflow (informal) learning,” “mobile learning.” On top of that, he sees a development from standardized learning environments to “personal learning environments” (Downes 2007). But

what is really meant by that? What constitutes the new, innovative element that is described with terms like open-learning cultures and (e-)learning 2.0? And above all: How will it impact quality assurance, design, management and development, or learning? And if so: Do we need new methods and concepts to improve and assure the quality for open-learning cultures? Those questions are at the beginning of many debates around the changes technology-enhanced learning evokes in formal learning contexts.

It is generally perceived that open-learning cultures and technology and social media for learning are a demanding shift from a teacher and expert-oriented, asynchronous, top-down, micromanaged, and time-staged paradigm and culture of educating learners to a new paradigm: more learner-oriented, synchronous, bottom-up, and self-organized, self-paced learning—predominantly based on skill and competence development. Even though most experts engaged in the discussion about a changing higher education system agree that higher education institutions are becoming more closely aligned with the new requirements, the educational system and its institutions and organization are frequently accused by professionals for being “slow to recognize both the impact of open-learning tools and the environmental changes in what it means to learn” (Siemens 2004a). The outline of open-learning cultures will be discussed in this book along the lines of those landmarks.

Radical change usually only occurs when (1) substantial amounts of significant anomalies against a current paradigm bring about a state of crisis for the respective scientific discipline, and (2) when this circumstance results in a loosening or breaking up of rules and stereotypes. Kuhn refers to this as *paradigm change* (1962: 10, 80, 89). This paradigm change in learning and education, amplified among other factors by the 2.0 culture and its economic and social consequences, is still in full swing (CWRU 2008). It is clear that, even though the endeavor to improve the quality of learning is regarded as a cornerstone for the future development of technology-enhanced learning and one of the crucial factors determining the success of the European transformation into an information society (Ehlers et al. 2005: 70), most currently existing approaches and concepts of developing and assuring the quality of learning within and for the new and emerging learning environments still have an explorative and experimental character reliant on best or good practices, examples, guidelines, and benchmarking (Rekkedal 2006). The process of adjusting to new measures, which Pond (2002: 1) describes as “learner-centered, local, deferential, tailored, open, collaborative, qualitative, flexible, learning-as-constant with time-as-variable, teacher-skilled, aggregated experience, international/global, dynamic, distributed-delivery model, outcomes, services” must indeed be expected to take place in small incremental steps rather than in a revolutionary way.

With the emergence of modern technologies and the Web 2.0 revolution, content creation, participative information sharing, and, most notably, collaboration among users has revolutionized Web-based communities and created cutting-edge concepts, coining and promoting the terms Technology-enhanced learning 2.0,

peer production, and informal learning. This shift in technology, accompanied by the paradigm change of learning, raises questions of whether the understanding, the proceedings, and the utilized systems and methods of traditional quality development approaches and concepts—based on examining the actual outcomes of learning by means of comparing the results of learning processes with predefined standards and using traditional forms of measurement—can be effectively and successfully put into practice (Ehlers 2008). Participants of the emerging learning scenarios must adjust to these challenges in order to ensure the quality and thereby the effectiveness, sustainability, and measurability of their learning.

This book deals with the described questions. In five chapters we will outline the changes and the consequences for quality development and assessment of learning which is changing, as we will show, from “assessment of” to “assessment for” learning.

Chapter 2 elaborates the background for the new influences which find expressions in a move towards more collaborative, distributed and networked, more informal and self-guided learning. We will deal with the rise of social media for learning, Web 1.0 and Web 2.0, and show how architecture of participation can change learning activities.

Chapter 3 will apply these new paradigms to learning and education and outline how open-learning landscapes look like. We will discuss the shift from knowledge transfer to competence development, the rise of lifelong learning, and deal with the importance of informal learning, User-Generated Content and Open Educational Resources. The visit to open-learning landscapes will close with an outlook on the diversification of learning contexts.

Chapter 4 is putting the most important elements of open-learning landscapes in the spotlight, peers, networks, communities, and collaboration. We will define peers and peer collaboration, show how learning paradigms evolve from constructivist over connectivist to generative learning paradigms and discuss learning communities and networks.

Chapter 5 will show how to consider quality in the open-learning landscapes. We will present the debate of quality in the light of open-learning cultures. The chapter will explain which dimensions are changing on the move from technology-enhanced learning 1.0 to technology-enhanced learning 2.0. Readers will be presented with a step by step guide through important questions in order to develop their own quality concept for open-learning landscapes.

The final chapter finally deals with the question of assessment for e-learning 2.0 scenarios. A number of methodologies will be presented. In addition suggestions and guidelines for their use in practice are suggested, templates provided, and cases used to exemplify the described methods.



## 1.1 A Fast Track Introduction to the Connection Between Quality and Assessment

On the surface everything seems easy: A *high quality* course will lead to good *assessment* of the *learning outcomes*. The connection is clear! If in a higher education institution all students are passing the exams with reasonably good grades, we feel that the quality of teaching is good. If too many students fail we perceive a problem. The diagnostics of learning outcomes through assessment seems to be clear. However, both topics—quality and assessment—are extremely diverse fields with a large body of research and theories associated to them. Still, assessment—in a larger context seen as the recognition of evidence of learning—is posing a strong challenge to educators who have to deal with it in their everyday teaching, as it is one decisive element in the larger quality discourse.

In educational practice, assessment is used to determine the learning outcomes of students—which in turn often are seen as the indicator for quality. If students demonstrate that their learning has resulted into demonstrated evidence that they have met all learning outcomes this is viewed as high-quality learning process. However, the direct attribution of learning outcomes to the formal learning scenario is becoming increasingly difficult with technology widening the learning sphere and adding informal learning elements to it. We therefore need a more integrated understanding of assessment as integral part of learning processes, which directly enables students to determine usefulness of learning experiences for overcoming their learning problem. The challenge there lies in the attempt to connect quality and assessment into a new way in one approach.

In the narrow sense, both quality assurance as well as assessment are concerned with defining the value, measuring, or evaluation, in one case as an objective measure of a certain quality of a whole course, a piece of material or a learning environment, in the latter case of the learning achievements and outcomes of a learner. Both are aiming at value judgments and thus demand a certain model or philosophy which forms the basis for this judgment, e.g., a learning theory or a conception of learning. On another level they have similarities because they both are usually involving an external view for assessment and analysis rather than an internal view (see Table 1.1)

However, to stop at this point would be to abandon most of the developments around these concepts which are more and more opening up, involving other perspectives, different methods, and more and more also the internal self-assessment view. Therefore we will have a look across the strict borders of assessment of learning into the field of (self-) assessment for learning. We will also open the field of quality assurance of learning materials and courses into the field of quality development for learning.

It has been widely noted that quality and assessment are key drivers of technology-enhanced learning today. Both are hotly debated topics which continuously change shape through the emergence of new and further developed learning technologies. While there is little dispute of the relevance of both concepts to

**Table 1.1** Quality assurance and assessment—broader vs. narrower view (Ehlers 2007a)

	Quality assurance/ development	Assessment
Narrow view	Measuring and evaluation of a course, material, learning environment Need to base value judgments on a model of learning External perspective	Measuring and evaluation of learning achievements, outcomes, competences
Broader view	Moving to quality development for learning and distance education Moving from control to culture and development	Moving to assessment AS learning  Moving from external to peer and self-assessment

technology-enhanced learning, they both are under continuous evolution and adapt to on-going challenges. Assessment is a part of every learning process—and derives its high relevance from this very fact. In formal settings it is done explicitly—in informal settings often conducted implicitly by the learning individual itself. Assessment can be formative or summative, external or carried out by the learner him/herself—as self-assessment. There are different methods how assessment can take place and different purposes it can serve as well as different objects which can be assessed in a learning environment.

The comparison between the narrow vs. the broader view of quality assurance, resp., development and assessment shows the direction in which we are developing. Assessment is moving from an often summative measurement and evaluation of learning achievements, outcomes, and competences to assessment as an integral part of the learning process and from predominantly external to peer- and self-assessment processes. At the same time quality assurance, as measuring and evaluating a course, material, learning environment moves to quality development in which it is less a controlling exercise but more a method to stimulate quality culture and continuous quality development.

## Chapter 2

# Discovering the Power of Social Media

Welcome! If you are a visitor of the new open-learning worlds, then you probably have found your way here through brief information on your twitter message system or because the RSS feed you have registered to has pointed you to read about quality development and assessment for open-learning cultures. In this chapter you will learn why and how the “2.0 movement” changed learning. Therefore the most significant concepts that influenced the paradigm shift from Web 1.0 to Web 2.0, as well as a contemporary theoretical learning theory, will be explained and put into perspective of their potential impact on quality development within advanced learning scenarios. Finally the key implications of the change and the resulting challenges that quality development is facing in these scenarios will be presented.

### 2.1 Getting Started with Social Media

Technology-enhanced learning of the first decade was often used to reproduce forms of teaching of the classroom mode. An example would be the lecture script which is made available online for download. Although considerable amounts of resources were consumed for the creation of well-designed content modules, the power of technology-enhanced learning did not make it to a convincing and more general offering. Technology then was not used to change the classroom but to reproduce classroom style learning with electronic means. However, all methods of distribution which are employed to transport materials in yet a different format between teachers and learners are just another form of logistical arrangement—not of a different learning design. They do not change the classroom interaction or empower learners to be more interactive.

After a first period of enthusiasm, the initial popularity of technology-enhanced learning in higher education institutions made way to frustration because, despite of the often very well-designed multimedia course content, an increasing number of learners were not completing their courses because they missed the interactivity,

exchange, and possibility of multiperspective learning pathways (Cross 2001). The degree of maturity of professionals and organizations to use technology to enhance learning experiences varies a lot. In a recently published international survey about the degree of incorporation of technology-enhanced learning into higher education three different phases were identified (Tiffin 1980, Romiszowski 2003):

1. An initial phase with an exponential growth of technology-enhanced learning offers, which was pushed specifically through the early adopters (Rogers 1962) and supported through many public and private funding programs.
2. The so-called tumble-back phase in which the initial enthusiasm was slowed down through unsuccessful projects, initiatives, and investments, as well as the discovery that the introduction of technology-enhanced learning does not automatically lead to improvement of learning and teaching experiences but that rather an organizational culture change is necessary (Bremer/Hildbrand/Binet 2002, Pape/Rolf 2004).
3. A careful “re-birth” phase in which programs and initiatives are redesigned and implemented under consideration of the experiences made before. Learnings from previous failure lead to better planning, implementation, and management of technology-enhanced learning in practice.

The recently published international comparative OECD study about technology-enhanced learning in tertiary education which compared 19 cases of technology-enhanced learning in organizations concludes that we are currently deep within phase 2 (OECD 2005), today some organizations have moved already into phase 3.

The advent of Web 2.0 has been a fundamental changed to the way how technology-enhanced learning was perceived in higher education institutions. Even though the basic idea behind Web 2.0 was perceived as a returning to Tim Berners-Lee’s original idea of the Web as a read and write medium and the simultaneous addition of new, social, participatory, and technologically advanced elements, it led to a conception that the Web had entered a new era, known as the Web 2.0 era (Anderson 2007: 2). Since this development, however, not only changed the general perception and utilization of the Web but also impacted various adjacent domains and inspired the generation of terms such as Enterprise 2.0, Knowledge Management 2.0, and Technology-enhanced learning 2.0, it can be referred to as a “2.0 culture” or “2.0 movement.” This emergence of the 2.0 movement has motivated and influenced users of the Web to harness and exploit the benefits of services and applications such as Google+, Google Docs, Blogger.com, and Slideshare.com (and many others) for the purpose of becoming their own “instructional designers and knowledge navigators” (as Jay Cross puts it in Cross 2005b). This view is supported through a perspective on technology-enhanced learning which supports a more social, collaborative, and informal approach to learning. According to this perspective learners have become more self-organized, self-directed, and self-determined and are incessantly seeking for formal and informal ways of developing, assessing, and improving their own learning in terms of competence and performance and by means of exploiting the power and

potential of peers and communities within the 2.0 space (Downes 2005; Ehlers 2008). The consequences of this new perspective on e-learning, generally subsumed under the umbrella term “technology-enhanced learning 2.0” (also used in this book) entails that what learners learn is no longer exclusively “produced” by experts and teachers but to a great extent by the learners themselves.

Besides several other implications, this empowerment of learners and the resulting change from learning as one-way distribution towards multi-way forms of collaboration and peer production naturally also has implications for quality assurance. The quality of learning products and processes can no longer be assured and assessed at one single point of the production chain. Accordingly existing concepts of quality development are challenged to such an extent, that present approaches have to be revised and new approaches, aligned to these new requirements are under development.

### **Case: Higher Education Institutions of Warwick, UK**

The Higher education institutions of Warwick were one of the earliest to offer Web 2.0 services at the institutional level and has been offering all its students personal blogs since October 2004. This was undertaken partly in order to see what would happen, and partly to foster a community, with education seen as secondary function. The higher education institutions decided to develop its own blogging system as there were no commercial systems that met its needs. In particular, they wanted to be able to take advantage of single sign-on and have the ability to integrate the system with other higher education institutions systems. The blog is widely used, and current statistics give an indication of the take up. When students leave, they can have the blog deleted or frozen or they can export the data to take with them. The blogging system has changed social context for students, but uptake for teaching has not followed through, in part because teaching staff do not look at what students have been doing before incorporating that practice into their teaching. While there are some inappropriate and offensive posts on the system, experience shows that these lead to comments from other bloggers which render the posting more positive. In theory students (and staff) are bound by the higher education institutions acceptable usage policy (AUP), but staff do not monitor and only deal with cases that are reported to them.

(Based on Franklin 2007)

## **2.2 The Rise of Web 2.0 and Social Media in Higher Education**

Due to a very fast development of Web 2.0, new tools, approaches, and services emerge(d) almost daily. Although many Web 2.0 tools have a commercial dimension, the important feature in the development of most new Web 2.0 tools is their

open source background. These tools can be seen as services, applications, or distribution platforms, which provide platforms for peer production. However, open source business models vary—open source does not automatically mean free of cost or totally non-commercial.<sup>1</sup> There are several descriptions of Web 2.0 available, like the following two:

“Unlike Web 1.0, this new technology encourages user participation and derives its greatest value when large communities contribute to the content. User generated metadata, information, and designs enable a much richer environment where the value is generated by the volume of the users.” (Miltiadis and Roberto 2008: 3)

“The use of Internet is characterized by increased participation and interaction of users to create, express themselves and communicate. The ‘participative Web’ is the most common term and underlying concept used to describe the more extensive use of the Internet’s capabilities to expand creativity and communication.” (Wunsch-Vincent and Vickery 2007: 17)

In summary they clearly indicate that Web 2.0 places its focus on user-generated contents and the participation of the users. Therefore “Web 2.0 for learning” is understood in this book as follows: Web 2.0 for learning emphasizes the participation of the individual learner and facilitates collaboration, interaction, and communication between learners, experts, teachers, and other stakeholders. Contents are generated in collaboration and peer interaction and provided by learners where the value of their contributions increases permanently with the volume of their participation.

### **Web 2.0 and Social Software**

There is no single agreed definition of the terms Web 2.0 and social software, but there is widespread agreement that they apply to a set of characteristics in the context of the Internet and online applications. The characteristics include access and use through a Web browser such as, for example, Internet Explorer or Firefox; being both supportive and encouraging of user participation in the sharing, consumption, and generation of content, including remixing and repurposing; and also amenable to developments in functionality consistent with user demand—users can and do, in effect, contribute to service and software design. At its simplest, social software has been defined as “software that supports group interaction.” Elaborations include “software that allows people to interact and collaborate online or that aggregates the actions of networked users”; “a set of Internet services and practices that give voice to individual users”; and, in the specific context of learning, “networked tools that support and encourage individuals to learn together whilst retaining control over their time, space, presence, activity, identity and relationship.” The most familiar and widely recognized examples of Web 2.0 activity include the following:

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<sup>1</sup> See e.g., Goldman and Gabriel (2005).

**Blogging:** An Internet-based journal or diary in which a user can post text and digital material while others can comment, e.g., blogger, Technorati, twitter.

**Conversing:** One to one or one to many between Internet users, e.g., MSN.

**Media sharing:** Uploading or downloading media files for purposes of audience or exchange, e.g., flickr, YouTube.

**Online gaming and virtual worlds:** Rule-governed games or themed environments that invite live interaction with other Internet users, e.g., Second Life, World of Warcraft.

**Social bookmarking:** Users submit their bookmarked Web pages to a central site where they can be found and tagged by other users, e.g., del.icio.us.

**Social networking:** Web sites that structure social interaction between members who may form subgroups of “friends,” e.g., MySpace, bebo, Facebook.

**Syndication:** Users can subscribe to RSS (Really Simple Syndication) feed-enabled Web sites so that they are automatically notified of any changes or updates in content via an aggregator, e.g., bloglines, podcast.

**Trading:** Buying, selling, or exchanging through user transactions mediated by Internet communications, e.g., Craigslist, e-bay.

**Wikis:** A Web-based service allowing users unrestricted access to create, edit, and link pages, e.g., Wikipedia.

(Based on JISC 2009)

The following section gives a short overview of the most popular Web 2.0 tools used in higher education<sup>2</sup>:

*Blogs* have been around since the mid-1990s when they were mainly presented as personal diaries on various Internet home pages (the name stems from the combination of Web + log book). Today blogs have become—among other things—efficient tools to express opinions, to distribute information, and also to serve as commonly read personal diaries. Modern blogs can also easily mix different media—text, graphics, pictures, video clips, audio clips, etc. What makes blogging so powerful is the linking of different “bloggers” in blogging platforms by forming so-called blogospheres where information can spread extremely fast. The linking of different blogs has become a very important tool for peer production particularly in cases where students themselves are encouraged to become peer producers and at the same time be active on commenting blogs of

<sup>2</sup>The examples given below are based on and/or partly taken over from van Harmelen et al. (2007): Web 2.0 for Content for Learning and teaching in Higher Education, <http://www.jisc.ac.uk/media/documents/programmes/digitalrepositories/web2-content-learning-and-teaching.pdf>

fellow classmates.<sup>3, 4</sup> Blogs are often tagged with pointing out keywords or they are listed according to the titles which are then visible in different blogosphere or blog account-hosting sites—also typical for blogging is regular updating which will often “push” old information to be invisible and history of the blogging is thus difficult to follow. Typical for blogging tools is that most of them are free for the users and thus the threshold to start active blogging is very low.<sup>5</sup>

Example of educational usage of Blogs:

- A group of bloggers using their individual blogs can build up a corpus of inter-related knowledge via posts and comments. This might be a group of learners in a class, encouraged and facilitated by a teacher, or a group of relatively dedicated lifelong learners.
- Teachers can use a blog for course announcements, news, and feedback to students.
- Blogs can be used with syndication technologies (below) to enable groups of learners and teachers to easily keep track of new posts.

*Wikis and other text-based collaboration formats* are describing a Web page or set of Web pages that can be easily edited by anyone who is allowed access—the most well-known of the wikis is Wikipedia.<sup>6</sup> The fundamental idea of wikis is to provide information voluntarily, decentralized, and openly. The information can be added, corrected, or totally new topics can be created without changing the whole structure of the site. Information providers are also reviewers of the information. Wikis provide also a way to common structured knowledge creation and distribution and thus they can serve as an effective tool for learning.<sup>7</sup> The quality of information has been staying rather solid in the various wikis—despite of minor vandalism appearing time to time in wiki-based Web sites. Today is easy to create own wiki environment for various topics. There are so-called wiki farms for hosting the sites, which have encouraged development of wikis also in higher education institutions and other educational institutions. In wikis the history of information or individual page is always visible and that helps to keep provided information valuable.<sup>8</sup>

Example of educational usage of WIKIs:

- Wikis can be used for the creation of annotated reading lists by one or more teachers.
- Wikis can be used in class projects and are particularly suited to the incremental accretion of knowledge by a group or production of collaboratively edited material, including material documenting group projects.

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<sup>3</sup> On educational uses of blogs—see, e.g., Williams and Jacobs (2004).

<sup>4</sup> See also Richardson (2006).

<sup>5</sup> See, e.g., <http://c4lpt.co.uk/Directory/Tools/blogging.html> (read 24 July 2008) of the various blogging tools available.

<sup>6</sup> See <http://www.wikipedia.org>

<sup>7</sup> See e.g., Parker and Chao (2007).

<sup>8</sup> See e.g., <http://c4lpt.co.uk/Directory/Tools/wiki.html> (read 24 July 2008) of the various wiki tools available.



- Wikis can be used by teachers to supply scaffolding for writing activities—thus in a group project a teacher can supply page structure, hints as to desirable content, and then provide feedback on student-generated content.
- Students can flag areas of the wiki that need attention and provide feedback on each other's writing.

*Tagging and social bookmarking* allow users to save their bookmarks online, tag them, and share them with others. In practice it is possible to install from Web (free of charge) programs which help you to store your bookmarks online, tag them, and share them with your colleagues and students. Use of tagging has become common way to look for information by using keywords. By using the tagging the user is able to select information wanted. The key to the applications of social bookmarking is metadata (information on information), which enables the sharing of this information. The probably best known social bookmarking application is del.icio.us, in which users can tag each of their bookmarks with a number of freely chosen keywords.<sup>9</sup> Different tools used for tagging and social bookmarking help users to search and identify information with keywords and topics and to save it all in own directory with favorites/bookmarks online. In practice they are personal Web sites where user can store archive their favorite Web pages. The importance of tagging and social bookmarking is in sharing the important links and information sources with other users. This enables—instead of replicating the information content on certain Web sites—the sharing of the links and ensures the validity of the information.<sup>10</sup>

Examples of educational usage of tagging and social bookmarking:

- Teachers and learners can build up collections of resources, and with a little ingenuity can also use social bookmarking systems to bookmark resources that are not on the Web.
- In this way it is easy to build up reading lists and resource lists. These may, with the use of multiple tags, be structured into subcategories.
- Groups of users with a common interest can team together to use the same bookmarking service to bookmark items of common interest. If they have individual bookmarking accounts, they all need to use the same tag to identify their resources.

*Media sharing* means the services which enable everyone interested to share multimedia in the public, like videos, photos, podcasts, or screencasts. Most common example of this service is YouTube<sup>11</sup> and UStream for videos or Flickr for photos. There are plenty of different sharing services for videos, photos, and podcasting.

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<sup>9</sup> See <http://del.icio.us>

<sup>10</sup> See e.g., <http://c4lpt.co.uk/Directory/Tools/bookmarking.html> (read 24 July 2008) of the various social bookmarking and tagging tools available.

<sup>11</sup> See <http://www.youtube.com>

Example of educational usage of media sharing:

- Podcasts can be used to provide introductory material before lectures, or, more commonly, to record lectures and allow students to listen to the lectures again, either because they were unable to attend or to reinforce their learning. Podcasts can be used to make lectures redundant while still supplying (possibly didactic) presentations of learning material by lecturers.
- Vidcasts can be used to supply to supply videos of experimental procedures in advance of lab sessions.
- Podcasts can be used to supply audio tutorial material and/or exemplar recordings of native speakers to foreign language learners.
- Distribution and sharing of educational media and resources. For example, an art history class could have access to a set of art works via a photo-sharing system.
- The ability to comment on and critique each other's work including by people on other courses or at other institutions.
- Flickr allows for annotations to be associated with different areas of an image and for comments to be made on the image as a whole, thereby facilitating teacher explanations, class discussion, and collaborative comment. It could be used for the example above.
- For Flickr, FlickrCC is a particularly useful ancillary service that allows users to find Creative Commons licensed images that are freely reusable as educational resources.
- Instructional videos and seminar records can be hosted on video sharing systems. Google Video allows for longer higher quality videos than YouTube and contains a specific genre of educational videos.

*Podcasting* as a term was initiated with launching of iPod—a portable digital audio player by Apple. Contemporary, the term is referring any software and hardware combination that permits automatic downloading of audio files for listening at the user's convenience. The key breakthrough for podcasting has been the audio signal compression technology—in particular, the MP3 standard. In education the podcasting is a powerful approach as the students are familiar with the underlying technology application. By combining the audio blogging with podcasting the lectures, experts' interviews, etc., it is possible to provide convenient methods in delivering the educational content. Also the students can easily add their own content using audio blogging and distribute those audio blogs by podcasting. Podcasting is becoming increasingly popular in education. Podcasts enable students and teachers to share information with anyone at any time. An absent student can download the podcast of the recorded lesson. It can be a tool for teachers or administrators to communicate curriculum, assignments, and other information with parents and the community. Remarkably, a number of leading US higher education institutions and colleges provide their selected lectures through the iTunes Higher education institutions site hosted by Apple.<sup>12</sup>

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<sup>12</sup> See [http://www.apple.com/education/itunesu\\_mobilelearning/itunesu.html](http://www.apple.com/education/itunesu_mobilelearning/itunesu.html) (read 24 July 2008).

There has been quick development in a number of new services, which will also change the environment of peer production in e-learning (for usage examples see section above).

**Social communities and social networking:** Systems that allow people to network together for various purposes. Examples include Facebook and MySpace (for social networking), LinkedIn or XING (for professional networking), Second Life (virtual world), and Elgg (for knowledge representation and learning). Social networking systems allow users to describe themselves and their interests, and they generally implement notions of friends, ranking, and communities. The ability to record who one's friends are is a common feature that enables traversal and navigation of social networks via sequences of friends. Ranking and communities are more selectively implemented. Ranking of user contributions by community members allows for reputations to be built and for individuals to become members of good standing; this can be an important motivator for the individual contributions that make for a thriving community. The ability to create subcommunities allows for nurturing and growth of subcommunity interests in an environment that provides a degree of insulation from the general hub-bub of system activity.

Example of educational usage of social communities and social networking:

- LinkedIn acts, at a professional level, as a model of educational use in the way in which it can be used to disseminate questions across the community for users seeking particular information.
- There are a wide variety of educational experiments being carried out in Second Life. These vary from the mundane with a virtual world gloss to more adventurous experiments that take advantage of the virtual reality facilities (e.g., construction of ancient environments for exploration by students).
- Other varieties of social networking systems are used at a professional level for community learning and act as potential models for educational use: e.g., Confluence25, a corporate wiki system with a social network focus, is currently being used in a pilot project by Manchester Business School to promote the spread of knowledge in Local Government communities.

**Collaborative editing tools:** These allow users in different locations to collaboratively edit the same document at the same time. As yet most of these services do not allow for synchronous voice or video communication, so the use of third-party synchronous communication systems is often needed to coordinate editing activity. Examples are Google+, Google Docs & Spreadsheets (for text documents and spreadsheets), and Gliffy (for diagrams). Today there are over 600 such applications.

Examples of educational usage of collaborative editing tools:

- For collaborative work over the Web, either edited simultaneously or simply to share work edited by different individuals at different times.
- Creation of works of art or design across disciplines. For instance, architecture and interior design students from different higher education institutions working together to complete a commercial brief.

**Syndication technologies:** In a world of newly added and updated shared content, it is useful to be able to easily keep up to date with new and changed content, particularly if one is interested in multiple sources of information on multiple Web sites. A feed reader (sometimes called an aggregator) can be used to centralize all the recent changes in the sources of interest, and a user can easily use the reader/aggregator to view recent additions and changes. Behind the scenes this relies on protocols called RSS (Really Simple Syndication) and Atom to list changes (these lists of changes are called feeds, giving rise to the name feed reader). A feed reader regularly polls nominated sites for their feeds, displays changes in summary form, and allows the user to see the complete changes.

Examples of educational usage of syndication technologies:

- In a group project where a wiki is being developed collaboratively RSS feeds can be used to keep all members of the group up to date with changes as they can be automatically notified of changes as they are made. Similarly for new blog posts made by class members.
- Feed Readers enable students and teachers to become aware of new blog posts in educational blogging scenarios, to track the use of tags in social bookmarking systems, to keep track of new shared media, and to be aware of current news, e.g., from the BBC.

**Second Life:** Second Life is a virtual world with tens of millions of square meters of virtual lands, more than 13 million “residents,” and a thriving economy. Large numbers of colleges and universities—or, in some cases, individual departments or faculty—are active in Second Life, not only for academic purposes but also for campus visits, recruiting activities for prospective students, and fundraising. Second Life lets educators easily build and modify learning spaces to test how different strategies for a physical space affect learning, and a similar approach can be taken toward educational activities in those spaces. Users install an application that runs locally and communicates with servers that host the virtual world. Once registered, users create and customize their avatars, which can be changed at any time using either the built-in options (for things like hair and clothing) or by creating new options or buying items that others have created. Basic accounts cost nothing but have some restrictions, such as for owning land. Premium accounts provide a weekly stipend of Linden dollars and enable other features. All users can buy Linden dollars to participate in the Second Life economy. Once in the virtual world, users can search for places, people, and activities. Avatars can teleport to any location in Second Life and navigate by walking or flying around the space. Users can communicate with others through chat and other text media or, with VoIP enabled, can speak to one another. Each avatar has an inventory of things it can use or give to other users. Numerous gestures are available, including waving, sitting down, or dancing. In short, avatars can do anything for which a programmer has built a function.

### Second Life in Higher Education

The business school at Craig's higher education institutions created a shopping center in Second Life that includes a row of retail spaces. His marketing class is spending next month on a unit covering retail space design, and class projects are based in these virtual shops. Working in teams, students create virtual items (merchandise)—such as clothes, furniture, or hair styles for avatars—and design and build retail spaces where they can sell their goods to Second Life users for Linden dollars, the currency of Second Life. Craig's group decides to sell sunglasses, and the five members of his group create a few dozen styles, ranging from fairly pedestrian tortoise-shell options to frames that look like flamingos. They build out the interior of the storefront, creating display cases, informational signs and tags, and virtual mirrors where Second Life residents can admire their "reflection." They use picture-editing software to make posters of celebrities "wearing" the group's sunglasses, which they hang around the store. Finally, they create a sign for the front of their store, "Second Life Shades."

The student team observes how Second Life users—through their avatars—move around the space, noting which displays tend to interest users and which sunglasses are the most popular. The ease with which they can modify the space lets them rearrange the interior of the store to see how they can influence traffic patterns and whether this affects purchasing. Second Life Shades plays music, and students watch to see whether different styles of music seem to influence buying. Although avatars do not have to represent the users behind them, Craig assumes that, for the most part, users create avatars of their actual gender, and he focuses on apparent differences in shopping habits between men and women. With a few simple clicks, Craig can change the posters in the store, or change the colors of the walls or the carpet, to see how these changes affect the shopping habits of the male and female avatars. Two students in Craig's team "work" in the store. Their avatars, one male and one female, answer questions about the products and otherwise interact with visitors, so the team can observe how the salesperson's gender and behavior appear to influence shoppers. By the end of the project, Craig has observed many of the marketing principles he read about in the textbook at work in the virtual store.

(Based on EDUCAUSE "7 Things You Should Know About Series," <http://www.educause.edu/7Things>)

**YouTube:** YouTube is a video-sharing service that lets users upload files to YouTube servers, where they are available online. With the exception of content that is offensive or illegal, videos can be animations, footage of public events, personal recordings of friends—virtually anything a user wants to post. Videos can be informational, entertaining, persuasive, or purely personal. One of an emerging class of social applications, YouTube allows users to post and tag videos, watch

those posted by others, post comments in a threaded discussion format, search for content by keyword or category, and create and participate in topical groups. YouTube ties into several blogging applications, giving users a quick way to blog about a particular video and include a link to it. Users can view profiles of individuals who have posted or commented on videos, see their favorite videos, and contact them. YouTube is free, though people who want to post videos or comments must register with the site, creating a profile. Videos—which include tags, a category, and a brief description—can be public or restricted to members of specified contact lists. Several tools allow viewers to sort through videos to locate those of interest. Links allow a user to share a movie through e-mail, add it to a list of favorites, post a text-based or video comment about it, and read (or watch) the comments others have posted. A user can subscribe to all of another user's postings or to content that is tagged with particular terms. Each of these actions becomes a part of the user's profile. When others look at a user's profile, they see his favorites, comments, and videos he has posted. As a result, profiles are constantly updated to reflect each user's history and tastes. YouTube also allows videos hosted on its site to be embedded in other Web pages, such as blogs or personal Web sites. Because of the size of movie files and the number of formats, sharing video has not always been simple. YouTube has made sharing video easy by addressing the storage and server questions, as well as the issue of file format. The Flash player is the only player required, and it works consistently on various platforms. In addition, videos on YouTube generally stream smoothly, without lags or slowdowns.

### **YouTube in Higher Education**

For her term project in ecology, Maria decides to focus on the effects of logging near her hometown of Bellingham, Washington. Maria thinks that a documentary is the perfect way to demonstrate her knowledge of ecosystems while showing something she believes many of her classmates—at a state higher education institution in the southwest—know little about. From her parents, she collects hours of video taken near her home, spanning the two decades since she was born. When she goes home during fall break, she takes more video of the same areas.

Maria pieces together a video outline of her project, lacing together narrative, data charts, and footage of areas that have been logged. She posts the outline on YouTube, with access limited to the class. Her professor reviews the outline and provides feedback, as do several students. On a whim, she makes the outline public and is surprised by the number of people who watch her video and offer comments. One viewer suggests that she discuss different logging techniques and include information about proposed state legislation. Another viewer gives her tips about using video software to better match the sound and picture channels.

(Based on the EDUCAUSE “7Things You Should Know About Series,” <http://www.educause.edu/7Things>)

Twitter: Twitter is a metaphor taken from the world of birds. They are tweeting with each other about latest news and stuff that matters. Twitter is offering this to everybody in form of a simple Web service. Twitter is a so called Microblog. Microblogging is the practice of posting small pieces of digital content—which could be text, pictures, links, short videos, or other media—on the Internet. Microblogging has become popular among groups of friends and professional colleagues who frequently update content and follow each other's posts, creating a sense of online community. Twitter is currently the best-known microblogging site, its popularity supported by a growing collection of add-on applications that enable different and often more engaging microblog updates, such as TwitPic for uploading pictures or PollyTrade for buying and selling stocks. Meanwhile, a number of competing microblog applications—some open source, many aimed at specific interest groups—continue to challenge Twitter's popularity. This resulting profusion of tools is helping to define new possibilities for this type of communication.

### **Twitter in Higher Education**

Every spring, Dr. LeClerc accompanies a class of undergraduates to Paris, where they immerse themselves in Parisian society and study French cinema. This year, he decides to experiment with Twitter as a way to capture student observations and reflections. He assigns a unique hashtag for the class and instructs the students to “tweet” about their impressions of the city. Using a host of third-party Twitter applications, students submit short text posts, upload photos, and post audio or video comments. In particular, Dr. LeClerc encourages the students to create short videos that symbolize their learning experiences and embody the spirit of the city.

As the quarter progresses, students post short reflections about an outing they took to a French movie studio and an intense discussion with a film director. Aside from the group activities, the students work on independent projects, and they follow each other's posts to see what their classmates are doing in various parts of the city. Each student's posts represent a unique perspective on Paris and French cinema, and the aggregate of all of the posts with the course hashtag represents the collective experience of the class.

Back on campus, graduate students in Dr. Shannon's course Documentary and New Media intently follow the microblog, which serves as raw material for a documentary the class is producing. Through their own Twitter accounts, the graduate students offer suggestions to the students overseas, ask for additional information about specific posts, and request video clips of particular places and events in Paris. The resulting documentary combines audio and video posted by the students in France with commentary and other footage supplied by the graduate students on campus. The video captures not only French cinema but also the unfolding story of the undergraduates' visit to Paris, their immersion in French culture, and their learning experiences.

(continued)

The graduate class uses Twitter to promote their documentary to the public, and the Twitter account for the film class collects hundreds of followers. When a first cut of the video is finished and available on the department Web site, the team announces it on Twitter. Many who watch the documentary use Twitter to post comments and suggest improvements. The team discusses this feedback and makes changes based on what they learn. A new announcement goes out on Twitter for the “final cut,” which is featured prominently on the higher education institutions Web site.

(Based on EDUCAUSE “7 Things You Should Know About Series,” <http://www.educause.edu/7Things>)

The richness of newer services on the Web provides also novel opportunities to utilize them to promote quality in peer production of e-learning. Social networking can work as an important tool to identify interested people outside of the own organization for peers to conduct peer reviews as well as to work in receiving/giving “the second opinion” on produced e-learning materials and contents. Aggregating services are providing easy-to-use services in collecting essential content across various Web sites. It not only eases benchmarking of existing learning materials but also provides assistance in “institutional peer learning”—i.e., finding out what other entities have published on the Internet. The data mash-ups serve the same function, although with a different technical realization. The new collaboration tools and services provide fresh opportunities to work across organizations. Not only the various wikis are increasing but also other collaboration and groupware tools are gaining ground quickly. Thus practical day-to-day work both within organizations as well as across organizations is easy to organize. For the quality management of peer production, this means practically that the back-and-forth sending of files and difficult change tracking can be replaced by the use of common collaborative tools and real-time maintenance of various documents.

The essential trend in the new Web 2.0 services is known as “cloud computing.” It refers to common business applications online that are accessed with an Internet browser, while the software and data are stored on the servers. The users of “cloud computing” customers generally do not own the physical infrastructure—rather they are renting the usage from a third-party provider (such as Google, Microsoft, or Yahoo). The users consume resources as a service and pay only for resources that they use; however, individual users are not often directly paying for the services, but accept, e.g., advertisements in the services used. Thus also the replicable office-style software will be used with an Internet browser, although the files are saved on a server administrated by the service provider. Importantly for peer production, the sharing of files and content becomes easier and more fluent, if the users want to share their content with their colleagues. Also virtual worlds (such as Second Life) are creating novel opportunities for peer production of e-learning and its quality assurance. While the content is displayed in virtual worlds easily accessed by the users, also the feedback from the users can be organized fluently.



Social tagging is basically sharing your tags with other users. Social tagging can be linked with the mechanisms of social recommendation, but in social tagging the users can also share their sources of knowledge and information with other users. The peer-produced news is news created by peers and thus they also can provide an important element in keeping the various users on track of the latest developments. In all, many of the newer Web 2.0 services are still young (and some still in their infancy in late 2009), but many of them provide easy-to-use tools to the quality work, especially in areas of fluent document sharing and routing as well as collaboration both within the organization as well as across organizations.

## **2.3 The Effects of the Next Generation Technology on Higher Education**

In higher education institutions we are often dealing with professionals who have their experiences with technology-enhanced learning from a time before Web 2.0. Often these experiences are relating to transmission-like reproduction-oriented learning models, using technology and distributing materials or assignments via the Web. It is important to understand that we have to explain the fundamental different paradigms which are underlying Web 2.0 technologies when compared with Web 1.0. They enable educators to employ the paradigm of social participation for learning rather than acquisition only. The following chapters will outline the shift from Web 1.0 to Web 2.0 which first of all is a technological issue. However, we will show the fundamental consequences which enable education to change which are going along with it.

### **2.3.1 *Web 1.0 and Web 2.0***

Web 2.0 is—according to Tim O'Reilly who coined the term in 2005—not a new kind of Internet technology but rather a new paradigm based on known and further developed Internet technology serving the purpose of designing new applications. The free encyclopedia Wikipedia explains that “Web 2.0 is a descriptive term for certain developments and not actually existent like, e.g., a certain version of software. It is rather the result of a synergy effect in which the participating technologies can individually seem insignificant.”<sup>13</sup>

On a technological level, the biggest difference between Web 1.0 and Web 2.0 can be described as the change from “ready-made, read-only Web” to “do-it-yourself and publish-Web.” A strategy paper for the German Federal Ministry of Education and Research recently created by a committee of renowned German scientists and company representatives concludes that the use of the World Wide

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<sup>13</sup> [http://de.wikipedia.org/wiki/Web\\_2.0](http://de.wikipedia.org/wiki/Web_2.0), from: 11.11.2007.

Web as a platform, the utilization of collective intelligence through incorporating the users “wisdom” (Wisdom of the Crowds Surowiecki 2004/Wikinomics: Tapscott and Williams 2006), the high regard of data, and the simple user guidance are typical characteristics of Web 2.0 applications (Albrecht et al. 2007). The study extrapolates that Web 2.0 should not be viewed as a momentary phenomenon but as a metaphor for public participation through the net (social software) as well as in other domains—enabled through Web 2.0. Albrecht et al. (2007) state that it is specifically the combination of technological development and new forms of use as well as habits, which makes the field of social software as dynamic as it is. Web 2.0 opens simple possibilities which lead to linking, community formation, cooperatively producing contents—which include technology-enhanced learning contents—fabricating publicity and steering of attention, managing and finding information and experts. New, cooperative ways of using the Internet are now employed and accepted by a large number of people. Examples are linked Internet diaries (by means of blogs), texts written cooperatively (via Wikis), new forms of advertisement and product evaluation (through user assessment, so-called social recommendation mechanisms), new services for making available knowledge collectively through cooperative semantic techniques (folkonomies) as well as cooperatively providing and assessing texts (such as videos, photographs, pod casts, texts).

It is foreseeable and often already noticeable that further use of these applications will result in a number of significant changes. Not only will the linking of people, contents, and applications increase, but additionally formerly static hierarchies of information and communication will become dynamic. New cultural practices will emerge, e.g., in communication, there will be new insights gained by analyzing user data and the learning and teaching processes will change. The latter is true especially for nonformal and informal learning which is becoming more and more important especially in the professional sector. Figure 2.1 shows a number of Web 2.0 applications. Web 2.0 changes the options a user has—the mere consumption of information being no longer the only important aspect of Internet use but actively creating contents, working cooperatively, and interacting within communities. This leads to forms of use characterized by participation, which require a certain kind of autonomy and comanagement from the users so that they can make use of the whole potential of this development as far as innovation and creation are concerned.

Many sources find answer to the question of what Web 2.0 actually is, by referring to a set of common applications and services, which have already become deeply associated with the term. In this instance it is usually referred to wikis, blogs, tagging, social bookmarking, multimedia sharing, and podcasting or enabling technologies such as AJAX, SOAP/REST, XML, XHTML/CSS, and RSS. Yet the Web 2.0 movement cannot be narrowed down to these enabling factors, as it also involves economical, technological, and social aspects that facilitate a more socially connected Web that empowers everyone to participate in and contribute to the information space (Anderson 2007: 5). Accordingly it is important to outline that Web 2.0 is rather about a set of principles and practices that form a paradigm, than about a certain technology (O'Reilly 2005: 1, O'Reilly 2007a: 17).



**Fig. 2.1** Social Web sphere

*Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an “architecture of participation,” and going beyond the page metaphor of Web 1.0 to deliver rich user experiences. (Source: O’Reilly 2007a: 17)*

According to this definition several aspects of the movement must be emphasized:

1. The “transition” from Web 1.0 to 2.0 did not occur at a certain point of time.
2. The phases of the Web referred to as Web 1.0 and Web 2.0 entail a tremendous amount of overlap for all intents and purposes.
3. The concepts and technologies of Web 2.0 are not substituting those known from the Web 1.0 era, but rather extending and building upon them.
4. It is questionable if a clear and satisfyingly distinction between Web 1.0 and Web 2.0 can be achieved at all.

**Table 2.1** From Web 1.0 to Web 2.0 (Ehlers 2008: 4)

	Web 1.0	Web 2.0
Surroundings and enablers	Challenge to access the Web Wired computing and access Dialup connections (call-by-call) Hardware costs	Challenge to be the Web Wireless computing and access Broadband connections (always online) Bandwidth costs
Paradigm and attitude	User (reading) Owning One-way Top down Privacy	Author (writing) Sharing Two-way or multi-way Bottom up Publicity (Weblogs)
Content and information handling	Homepages Local Wisdom of experts—static content Surfing—information on demand Finding information Directed behavior Answers Simple content (text, images) One time content creation Content created by (media) companies	Blogs Remote (Flickr, StumbleUpon) Wisdom of a crowd—microcontent Posting—information creation and compilation Making connections Finding by browsing/request Connecting to support Multimedia content (video, audio) Real-time content creation Collaboratively created content (communities)
Technologies	Taxonomy Web forms E-mail (portals) HTML Client–server Screen scraping	Folksonomy (tagging) Web applications RSS XML/XHTML Peer to peer APIs

Considering these aspects, it can be argued that the phrasing Web 2.0 does not hit the mark after all. O'Reilly puts it this way: “Web 2.0 was a pretty crappy name for what’s happening. Microsoft’s name, Live Software, is probably the best description of what’s happening” (O'Reilly 2007b). Regardless whether Web 2.0 is an extension or continuation of the original concepts and ideals of the Web, or a disruptive leapfrog into a different age e decided to use the version metaphor 1.0 and 2.0 in order to explain the undeniable shift that occurred over the last few years within and around the Web.

Table 2.1 summarizes differences between Web 1.0 and Web 2.0 and shows the change from a medium created by a small number of writers for a large number of readers to a platform of “microcontent” units, collaboratively created by any number and type of distributors, referred to with the term Web 2.0, as MacManus and Porter expressed it (MacManus and Porter 2005: 1).

It is however important to emphasize that the subjects presented within the Web 1.0 column have rather been extended than replaced by the juxtaposed elements

within the Web 2.0 column. In fact the comparison rather displays a shift of focus and attention. The advent of XML technologies for instance allowed for a separation of structure and style and thereby enabled web site content to be shareable and transformable between different systems. But although it also changed the way sites were built, it did not and presumably will never entirely replace HTML as the framing foundation of Web sites. Nevertheless it has impacted it substantially.

In addition to that, the comparison illustrates that the evolution of 2.0 is based upon the simultaneous growth of several underlying, interdependent and interdisciplinary concepts. And even though numerous attempts of describing the evolution in one simple phrase such as “Networks trump PCs” (Cross 2005a) or “People over Content,” “Communities building social information” (MacManus and Porter 2005), or “Users in control: remixing content” (Yee 2008), the paradigm shift cannot be completely understood without further examining the concepts behind the movement.

### ***2.3.2 From E-learning 1.0 to E-learning 2.0***

To let the cat out of the bag right away: e-learning 2.0 is not a scientific term. It is not about further development, a new paradigm, or a replacement in the sense of a new release. Strictly speaking it is not even about a new technology, a new model of learning or a new, separate, innovative variety of e-learning. E-learning 2.0 rather describes a number of developments, trends, and points of view, which require change from teaching to learning. The new point of view essentially connects technology-enhanced learning with five characteristics:

1. Learning takes places always and everywhere (ubiquitous) and therefore in many different contexts, not only in the classroom.
2. Learners take on the role of organizers.
3. Learning is a lifelong process, has many episodes, and is not (only) linked to educational institutions.
4. Learning takes place in communities of learning (so-called communities of practice: Wenger 1998): Learners participate in formal, as well as informal communities.
5. Learning is informal and nonformal, takes place at home, at the work place, and during leisure time and is no longer centered on teachers or institutions.

E-learning 2.0 means using social software and learning services, which can be combined according to individual needs. The word “can” is significant here, as technology alone does not determine its use. Only by linking it to a learning model the existing possibilities of learning can be enhanced to go further than in former contexts.

Web 1.0 having evolved into Web 2.0 also has consequences for using the Web in order to teach and learn. The World Wide Web and its use are changing and so are interlinked educational possibilities, especially in the area of so-called

nonformal and informal education.<sup>14</sup> The way of learning via Internet and computer technology is changing fundamentally. This is not a finished process but rather a permanently ongoing innovation, currently being discussed under the key term “e-learning 2.0.” What is behind that?

Simply stated, e-learning 1.0 follows a broadcasting logic, which is mostly based on an understanding of teaching as being transmissive. This is to say that information and materials are distributed, presented, and made available to students (see Fig. 2.2). Learning in this view can be described using the metaphor of “acquisition” of learning contents. E-learning 2.0 emphasizes the metaphor of “participation”—learning is perceived as an interlinked, social process in which Web 2.0 tools are used to develop learning results through collaboration and communication, compile one’s own learning environment, and comprehend the entire Internet as a learning resource—not only the given material for a class.

E-learning 2.0 comprises the creation of a new kind of learning platform with the help of the available Social Software: no longer is one learning management system (LMS) used as a material island in the ocean that is the Internet, but LMS needs to be understood as a gate leading into the Web (Kerres 2006). The e-tutor (teacher) functions only as a signpost in that he or she makes microcontent available in a portal, which opens the door to self-directed learning and makes it possible for learning objectives to be achieved. These are negotiated together with the learner and noted at the beginning, for instance via blog entry or pod cast (see Fig. 2.2).

In this process, Blogs can be used in many ways for the purposes of learning and teaching. An overview by Leslie (2003) shows different methods (see Fig. 2.3). Working with Blogs, the contents of students’ blogs can be compiled by means of an RSS-Feed. In this way, a gateway is created through which each learner can bundle their “collaborative content productions tools as fits their individual needs” (Wagner 2006). Thus, the learning environment no longer consists of single applications but is made up of different individually compiled and cooperative tools. In this context, the term “personal learning environment” (PLE) has come to be used. In a PLE the individual learner’s reflection takes place in Web logs or pod casts, as well as collaborative work in wikis (Kerres 2006: 6). Therefore learning is no longer the transfer and consumption of content and knowledge but also independent production. Mark van Harmelen et al. (2007) summarized the characteristics of a PLE as follows:

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<sup>14</sup> Overwien (2000) goes on to explain that the term “informal learning” is used to refer to learning processes that exist outside of formal institutions or non-formally organized processes, and that are financially independent Watkins and Marsick (1992: p. 288). Sometimes incidental learning is differentiated from informal learning. For Watkins and Marsick incidental learning is non-intentional and merely a byproduct of other activities while informal learning is mostly characterized by experiences and has a certain degree of reflection as a precondition. Additionally, informal learning is “self-directed learning, networking, coaching, mentoring, performance planning, and trial-and-error,” while incidental learning is, for example, “learning from mistakes, [...] internalized meaning constructions about the actions of others, hidden curriculum in formal learning” Marsick and Watkins (1990: p. 7).

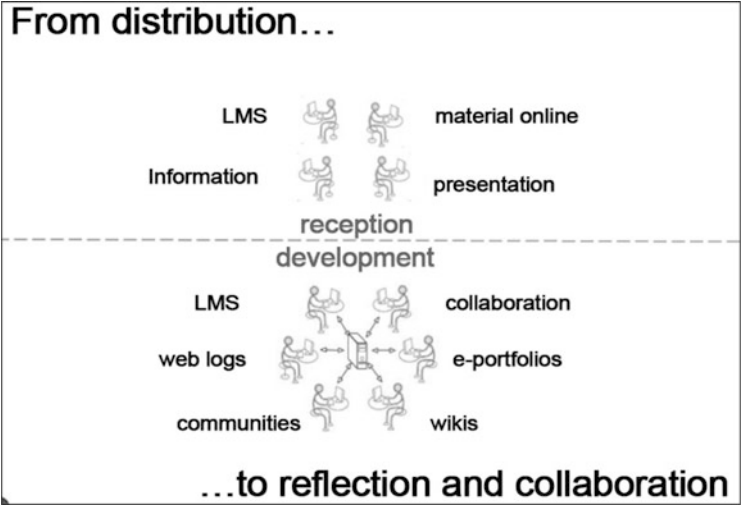


Fig. 2.2 Change in the landscape of e-learning

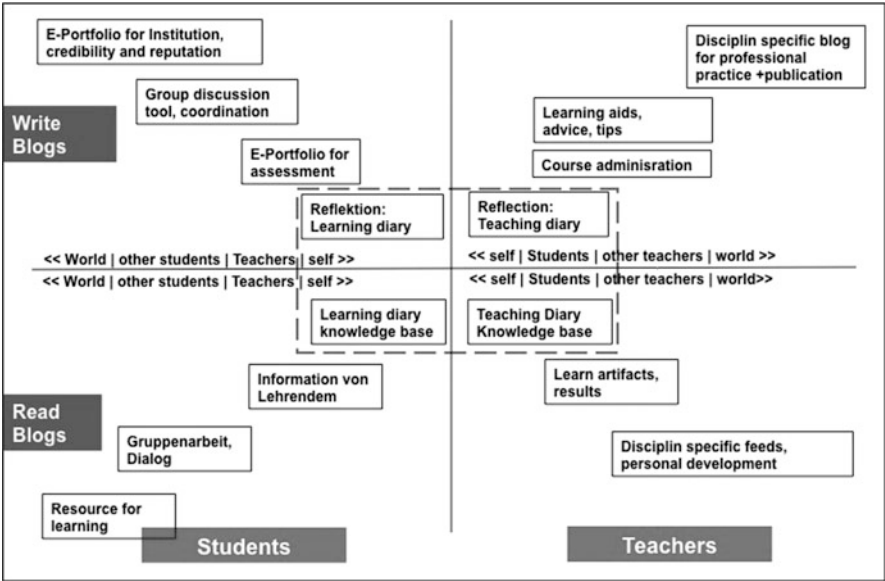


Fig. 2.3 Purposes of blogs in courses (based on Leslie 2003)

“Personal Learning Environments are systems that help learners take control of and manage their own learning. This includes providing support for learners to set their own learning goals, manage their learning, managing both content and process, communicate with others in the process of learning and thereby achieve learning goals.” (van Harmelen et al. 2007) (see Fig. 2.3)

In the long run, a “PLE” can develop in the form of an “interactive portal with all kinds of access to the personal digital world” of the individual person. In a “permanent process of producing knowledge [...] each person aggregates their data and contents according to personal interest, reflects and mixes them individually and shares them in the desired social context.” (Wagner 2006)

Downes (2006a), who is widely credited for coining the term e-learning 2.0, refers to e-learning 2.0 as a second phase of e-learning, based on the techniques of Web 2.0. Accordingly it comes with the constitution of Web 2.0 that e-learning 2.0 is rather about the interplay and conjunction of small and simple tools, enabling learners and/or designers to facilitate specific learning needs, than it is about closed systems. The Centre for Learning & Performance Technologies (C4LPT 2009) subsumes that while e-learning 1.0 was all about delivering content, primarily in the form of online courses and produced by experts, e-learning 2.0 is rather about creating and sharing small bits of information and knowledge with others and by utilizing various social media tools such as blogs, wikis, and social bookmarking services. In accordance with this notion Schenkler (2008: 1) defines e-learning 2.0 as a form of learning through digital connections, based on peer collaboration and enhanced by the technologies, which are driving Web 2.0.

The most significant differences between the traditional approach of e-learning and this new phase, which is sometimes also referred to as social or informal learning, will be outlined in the following (see Table 2.2).

Considering the fact that these characteristics are the result of various developments that influenced the perspective and trend that equally impacts and influences the shift from Web 1.0 towards Web 2.0 and e-learning 1.0 towards e-learning 2.0, it is now necessary to examine the underlying concepts of the 2.0 movement in order to substantiate the discussion.

### **Personal Learning Environments in Higher Education**

For the fall semester, David signed up for a digital photography course, and during the first class, he was assigned to a critique group with four other students. The professor explained that students would be creating PLEs—exploring free applications and networking sites, sharing what they learn with each other, and submitting work for feedback from those in the critique group. Each week students were to photograph something in a public venue and upload the photos to a Web site where the group could view them, critique and discuss the images, and blog about what they learned. David enjoyed looking through the blogs of his fellow students and subscribed to the RSS feeds of his favorites so he would know when each was updated.

David found the feedback from his in-class critique group so useful in improving his photography that he created an open group in Flickr for his growing collection, inviting the wider photo community to comment on his work. During a zoo trip, he photographed a llama that looked oddly taken aback. Everyone smiled at the comic expression, but the image was a chance



**Table 2.2** From e-learning 1.0 to e-learning 2.0 (Ehlers 2008: 15)

	E-learning 1.0	E-learning 2.0
Concept	Training/training programs	Learning/collaboration platforms
Components	Online courses; courses as the basic unit of organization: (Courseware, LMS, and authoring tools)	Networks as the form of organization (reference hybrids, LCMS, discussion groups, wikis, social networking & bookmarking, add-ins, mash-ups)
Environment	Learning platform	Personal learning environment
Flow of information	Top-down and one-way	Bottom-up and multi-way (collaborative)
Triggered by...	Push	Pull
Source of content	Content created by experts (based on proprietary knowledge)	Content created by learners and peers (based on shared knowledge)
Content development	Linear	Exponential
Learning approach	Mandated (just-in-case)	Self-service (just-in-time)
Proceeding	Learning takes place by reverse engineering	Ideas are “paid forward”
Time of development and form of delivery	Slow, extensive and in one complete piece	Rapid and in many pieces (on-demand)
Average duration for content consumption	30–60 min	5–15 min
Time of access	Prior or subsequent to application/work	In between and during work/application
Directive and content	Curriculum (progresses on the shoulders of experts)	Discovery (lessons learned for the benefit of everyone; Learning diaries/e-portfolios, etc.)
Organization and workflow	Structure of classes	Communication
Feedback and communication	Availability of tutors	Interaction with micro-mentors (peers)
Learning process	Appropriation processes (learning as absorbing given information)	Participation processes (learning as seeking, selecting, creating and linking information)
Driver	Instructional design	Learners develop on themselves
Basis for learning and learning materials	Multimedia (interactive)	Social networks and communities of practice
Teacher’s role	Content creation, instruction, motivation (gourmet chef)	Guidance, feedback (food critic)
Quality is assessed by...	Experts	Learners and peers (based on the wisdom of crowds)

shot with hasty framing, so his in-class group suggested cropping and minor cleanup work. Then he asked his group on Flickr to suggest titles, from which he chose his favorite, “Whoa, Dude.” He later sold the photograph to a newspaper editor who had seen it on Flickr. It ran with an article about an upcoming music festival at the zoo.

The final course assignment was a joint photojournalism exercise for the class. Students were to cover the local Trout Day Parade along the riverfront, where floats and costumes took an aquatic theme and the river offered a consistent backdrop. Images would accompany a brief article or interview to be posted on student blog sites. One student compiled the articles and ran the text through Wordle, posting the resulting word collage. Two other students used the collage as a background and pasted all the class photos on top. When the completed group project was published online, several images received outside recognition. Students gathered those comments for Wordle, too, using the result as a sidebar for a page of final reflections on the course. The following semester, when David submitted some of his work for a fine arts student fellowship, he felt confident about his submission, having integrated input from his group at Flickr, which now included several of his former classmates.

(Based from the EDUCAUSE “7Things You Should Know About Series,” <http://www.educause.edu/7Things>)

## 2.4 The Read and Write “Prosumer” Web

Apparently the shift towards the 2.0 culture encapsulates several intricate concepts. With regards to this notion and referring to O’Reilly’s definition of Web 2.0 (2005: 1), the principles and ideas of and behind these concepts will be outlined briefly over the course of the following chapters.

In accordance with Tim Berners-Lee’s (2001: 169) famous quote, “I have always imagined the information space as something to which everyone has immediate and intuitive access, and not just to browse, but to create” and his resulting vision of the Web, as a medium that allows every individual to not only consummate but to contribute, individual production experienced a renaissance, by means of the possibilities of user-generated content<sup>15</sup> within the 2.0 era. As a consequence of this development and due to applications and services such as Youtube.com, Flickr.com, and Blogger.com, accompanied by an availability of cheap high quality digital devices, the barriers to enter the world of content creation have been lowered in such a dramatic fashion, that the resulting outpouring of production on the Web has led to content that is shaped like conversations and probably forever

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<sup>15</sup> In some literature user-generated content (UGC) is sometimes referred to as content self-publishing, personal publishing, or self expression.

changed people’s perception of who has the authority to “say” and “know” (Anderson 2007: 15).

The shift from content creation by a selected group of authors towards the freedom and possibility of content creation by users from various different contexts is reflected in the educational sector in what can be called “blurring of boundaries” between learners and lecturers. In accordance the tremendously increased possibilities for learners to create learning materials, publish learning experiences, and recommend specific learning paths and activities to other learners turn the previously effective paradigm of learning as a distribution of information, knowledge, and experience from experts to learners upside down (Downes 2006a). And even though this trend is expected to liberate the prospects of learning by means of opening up new ways of informal learning, peer-learning, and peer-production, it on the other hand also causes significant challenges for the ambition to enhance the quality within e-learning and especially e-learning 2.0 environments, as it

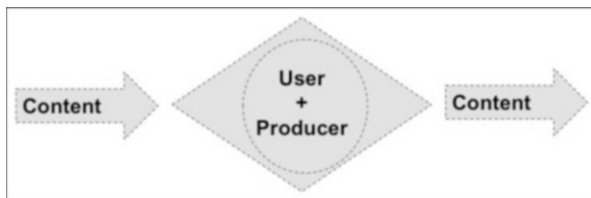
1. Increases the amount of to-be-verified information drastically
2. Decreases the influence of established authorities for quality control of learning contents
3. Complicates determining the adequate places, times, and terms of quality control and assurance

In order to describe the tight connection between production and usage of information in Web 2.0 Bruns (2007) coined the term “produsage.” This “mot valise” comprises the terms production and usage. Bruns uses this term to describe the paradigm shift in WEB2.0 content creation. In reference to the industrial revolution, the traditional industrial value production chain: producer → distributor → consumer has developed to a produsage cycle (see Fig. 2.4).

“In such models, the production of ideas takes place in a collaborative, participatory environment which breaks down the boundaries between producers and consumers and instead enables all participants to be users as well as producers of information and knowledge—frequently in an inherently and inextricably hybrid role where usage is necessarily also productive: participants are Producers”(Bruns 2007: 3).

Producers engage not in a traditional form of content production, but are instead involved in produsage—the collaborative and continuous building and extending of existing content in pursuit of further improvement (ibid.) Bruns describes produsage through four key characteristics (ibid.: 5):

- “A shift from dedicated individuals and teams as producers to a broader-based, distributed generation of content by a wide community of participants
- Fluid movement of producers between roles as leaders, participants, and users of content—such producers may have backgrounds ranging from professional to amateur
- Artifacts generated are no longer products in a traditional sense: they are always unfinished and continually under development—such development is evolutionary and iterative



**Fig. 2.4** Produsage (based on Bruns 2007)

- Produsage is based on permissive regimes of engagement which are based on merit more than ownership: they frequently employ copyright systems which acknowledge authorship and prohibit unauthorized commercial use, yet enable continuing collaboration on further content improvement”

### **Adopting Web-Based Tools for User Generated Content**

1. Students can use an Internet search engine to collate relevant articles for a given topic.
2. Students can collaboratively construct a Wiki as a base of information.
3. Students can discuss relevant topics in an open-source discussion forum.
4. Students can share and collaborate on documents using media such as “Google Docs”

Bruns further outlines the core capacities in the field of produsage: “In other words, it is necessary (especially for educational institutions) to ensure that a wide cross-section of society is capable of participating effectively in produsage environments. The core capacities in this context can be summarized as “C4C”: critical, collaborative, creative, and communicative capacities which must be able to be exercised especially in information and communication technology (ICT) environments” (Bruns 2007: 6).

## **2.5 Harnessing the Power of Social Networks**

In order to understand and harness the power of social networks beyond technology it is important to have a look into the social implications of networks and analyze collective processes. The key characteristic of organizations which have adopted the new era of Web 2.0 is that they have “embraced the power of the Web to harness collective intelligence.” In consideration of this notion and in order to further examine on which principles the utilization, activation, and empowerment of users/learners as nodes within a network is based, the following paragraphs will briefly introduce the ideas behind the concepts of “the wealth of networks,”

“the wisdom of crowds,” “the strength of weak ties,” and “crowd sourcing”<sup>16</sup> and eventually provide a final extraction of the key implications of these concepts for quality development with e-learning 2.0 scenarios.

### ***2.5.1 The Strength of Weak Ties***

The “strength of weak ties” (Granovetter 1973) is a concept that significantly substantiates the importance of the potential and power of networks. The underlying assumption of the concept is that tight-knit connections between individuals such as close friendships (strong ties) are generally far more likely to resemble or overlap in terms of their social backgrounds, resources, and “treasury of information” than rather distant social connections (weak ties). Granovetter therefore argues that even though strong ties are typically more easily available, motivated, and ready to be of assistance, weak ties are usually more capable to provide individuals with access to information and resources beyond those available in their own social circles. Accordingly these weak ties are considered to serve as crucial functions in linking otherwise unconnected segments of a network, bridging separate cliques or subgroups, and eventually carrying information and perspectives into a network’s segments that are far often more unique and valuable than those provided by “strong ties” (Granovetter 1973: 217; Watts and Strogatz 1998).

### ***2.5.2 The Wealth of Networks***

According to Benkler (2006: 2) it can be argued that even though the term “Internet revolution” might be considered to be passé, the change it brought in terms of enabling a networked information environment, by means of increasing the role of nonmarket and nonproprietary production by individuals and collaborations is deep and structural. Benkler describes that this new information environment implies a new form of freedom that not only holds great practical promise for democratic participation, while serving as a medium to foster a more critical and self-reflective culture, but also threatens the incumbents of the industrial information economy. More importantly however Benkler expects that examples such as Wikipedia and Project Gutenberg are evidence for the fact the concept of peer production can and will be successfully extended beyond the scope of open-source software

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<sup>16</sup> Strictly speaking some of the concepts are not direct associative products of the Web 2.0 development. However, they are often referred to when speaking of Web 2.0 and regarding the most recent developments within the 2.0 sphere, numerous examples for adequate and successful appliance of the concepts substantiate their significance to the 2.0 movement.

development and onto social and cultural projects and induce a “transformation of the information and cultural production sector,” increasing political autonomy, enriching the public sphere, replacing mass culture with a more spontaneous folk culture, permitting individuals to play a role in the creation and circulation of information, and converting ordinary human activities into markets.

### ***2.5.3 The Wisdom of Crowds***

In accordance with Surowiecki’s homonymous book, the term “wisdom of crowds” refers to a concept that stands for the thesis, that under the right circumstances, groups of independently deciding individuals can be smarter than the smartest people among them (Surowiecki 2005: XIII). Accordingly the underlying theory is, if a quantity of imperfect judgments gets aggregated in the right way, the resulting collective intelligence can be excellent. In particular Surowiecki outlines three eminent advantages of disorganized decision-making: Cognition/Market Judgments, Coordination, and Cooperation. However, Surowiecki argues that in order to successfully exploit these advantages at least four conditions must be satisfied. First of all Cognitive Diversity within the group is of crucial importance as it expands a group’s set of possible solutions and enables it to conceptualize problems from different points of view (Surowiecki 2005: 36). Further on the Independence of a group’s individuals is of high importance for a sound decision-making process. In the first place, because it helps to avoid that errors in individual judgment become correlated and secondly, because independent members of a group are more likely to have diverse perspectives than individuals that all rely on the same familiar information (Surowiecki 2005: 41). Beyond that, Surowiecki states, that Decentralization is another essential condition for collective wisdom. That is, because the best way to decide upon the significance of collectively gathered or generated information, perspectives, and solutions, is based on the collective wisdom of that very same group. Accordingly the power of a group should ideally not fully reside in one central location (Surowiecki 2005: 75). However, according to Surowiecki the probably most challenging requirement for a capable and efficient collective decision-making process is the Aggregation of the individual views and sentiments.

### ***2.5.4 Crowdsourcing***

The concept of “crowdsourcing” is based on Web-based outsourcing to a crowd gathered on the Internet. Wired journalist Jeff Howe (2006) coined the term in order to conceptualize the popular Web-based procurement of media content, small tasks, and solutions to scientific problems. Well-known examples include stock photo agencies such as iStockphoto, Fotolia, and Shutterstock, acting as intermediaries

between amateur content producers and interested parties. InnoCentive and YourEncore on the other hand are popular examples of Web sites that motivate independent scientists and amateur or retired researchers, with rewards that go up to hundreds of thousands of dollars, to find solutions for R&D development challenges.

Contemplating the presented concepts, it becomes evident that the potential and power of networks and crowds in general bear a tremendously high potential for peer production within Web 2.0 and e-learning 2.0. However it must also be mentioned that utilizing these powers of and within networks implies intricate challenges that can possibly result in numerous defects and systematic flaws (Surowiecki 2005). In fact every concept depends on a set of contextual variables and constraints which need to be derived from the corresponding environments and fields of application in order to lead to high quality results. Nevertheless the 2.0 era has increased the effects of these concepts and undoubtedly effectuated a decrease in power and control of the established, institutional authorities for quality development and assurance within e-learning 2.0 environments. On the contrary this implies an enablement and empowerment of learners, which increases their importance and impact on the notion and implementation of quality development and assurance—making quality a concept which “has to be defined at the final position of the provision of the learning-services: the learner” (Ehlers 2004).

## 2.6 The Web as a Platform

The term “Web as a platform” stands for the fact that the Web has become an application delivery platform of choice, which in fact is a development that was incontrovertibly enabled by the progress of Web technologies such as XML and AJAX. While XML incrementally supported and performed the detachment of Web data into content-, structure-, and presentation layers, AJAX enabled developers to build Web sites that behaved like desktop applications and as a consequence an increasing number of applications do not just merely run over the Web, they completely run on the Web. The most popular examples for this development might be webmail applications (e.g., Gmail.com), photo-sharing platforms (e.g., Flickr.com), or the social bookmarking services (e.g., Delicious). In accordance with this trend, information that was once stored on private devices exclusively, is increasingly stored on Web servers and consequently not only becomes ubiquitously available but also can be selectively published. This development which Kerres (2006: 3) describes as a paradigm shift from local to remote and privacy to publicity naturally results in an enormous growth of publicly available incoherent and loose structured data. And even though concepts such as tagging, social search and social bookmarks facilitate to filter the data, it is still considered by many, that to manage, visualize, and most importantly to extract information from these massive amounts of data will be the essential piece to the puzzle in taking the 2.0 era onto the next level.

The most important impact of the trend, which is conceptualized as “the Web as a platform,” is based on the significant growth of places and destinations where learning content is produced, published and in many cases made initially available without further verification of its truth, correctness, or accuracy. Analogue to the concept of user-generated content, this development entails that preset points of control within defined quality control and assurance processes are scattered to such an extent that it is questionable if previously known concepts and approaches of quality development can still be applied successfully within e-learning 2.0 environments.

## 2.7 Architecture of Participation

Basically “architecture of participation” is a conception that is used to describe the nature of systems that are designed for user generated content. These user contributions, which of course come in all possible forms of presentation, such as text, images, audio, video, etc., are the crucial point to what is referred to as the transformation of the “Read Web” to the “Read-Write Web” (see Fig. 2.5), or the user vs. author paradigm shift (Kerres 2006: 2). This alludes to the fact that the Web changed from a one-way publishing medium into a platform that puts the tools required to collaborate, create value, and compete within everybody’s fingertips (Downes 2006).

Furthermore, it is argued that there is even more to gain from the massive amounts of user contributions than they eye can see. This refers to second order information that contains user contributions about other user contributions and includes information such as search results, popularity statistics, clicking, or tagging. This type of information is conceptualized by Battelle (2003) as the Database of Intentions. As a consequence, the assembling of collective value as an automatic by product not only heightens the situational awareness on specific content but also pinpoints the significance and future potential of metadata in the context of collective intelligence (O’Reilly 2004). Accordingly participatory architecture is not only about user contributions, data sharing, and modularity of content but also about designing open platforms that enable collective wisdom and innovations at the edge of the network (see Fig. 2.6).

In accordance with the implications that could be drawn from the effects of user-generated content, the understanding of “architecture of participation” presents a perspective that not only motivates to allow for as many forms of participation of users/learners as possible but also to incorporate every bit of information that can be extracted from these activities. With regards to learning this means that the influence of learners on the quality and quality development of EL 2.0 does not have to come from the willingly and explicitly provided contributions exclusively, as some potentially highly valuable information is hidden within implicitly provided information, educed from behavior and actions within these environments.



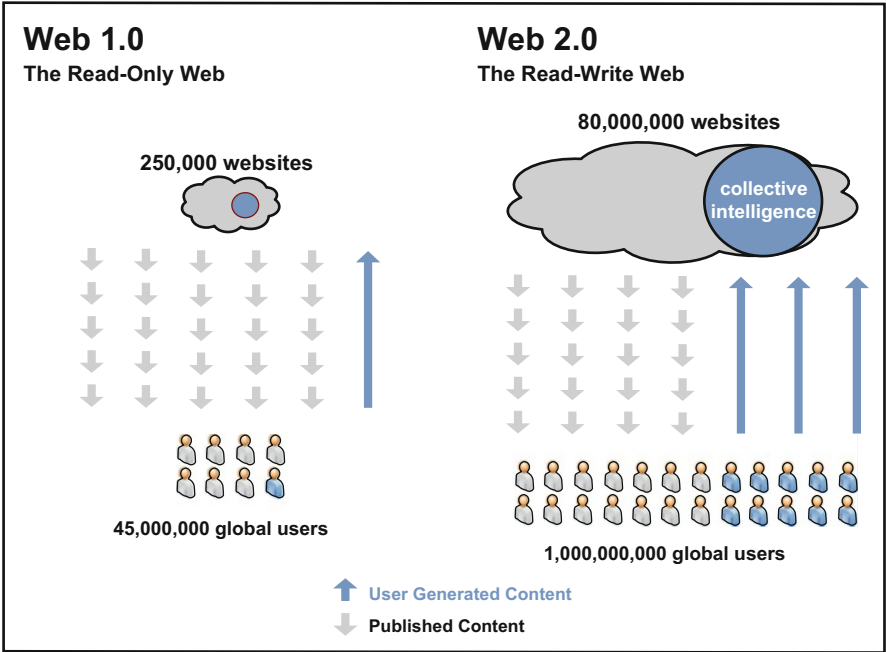


Fig. 2.5 Read-Only Web vs. Read-Write Web

2.8 Looking Ahead: Web 3.0 and the Semantic Web

As already stated in the introduction of this chapter, Web 2.0 is rather an ongoing evolution on the Web that is rather to be seen as the foundation for further developments and evolutions to come and less as the result of a finalized masterplan. Accordingly Jason Calacanis states that the future of Web 2.0, also referred to as Web 3.0 or Web X.0, will throttle the “wisdom of the crowds” of the 2.0 movement by balancing and substantiating it with the knowledge of experts. For many experts however, the term Web 3.0 stands for the Semantic Web. From the perspective of technological development the frontiers and routes of further development of Web 2.0 are somewhat clearly delimited. From an organizational development perspective or the question how Web X.0 can enhance educational experiences the next steps are still quite experimental and not well tangible yet. However, not only with the advent of Web 2.0 we have learnt that technological advancements will ultimate impact on social processes, and thus learning and development.

From a technological perspective it is consensual that the semantic Web will allow machines to read Web pages similarly to human beings. This is expected to enable engines and agents to comb through the Web while making “meaning” out

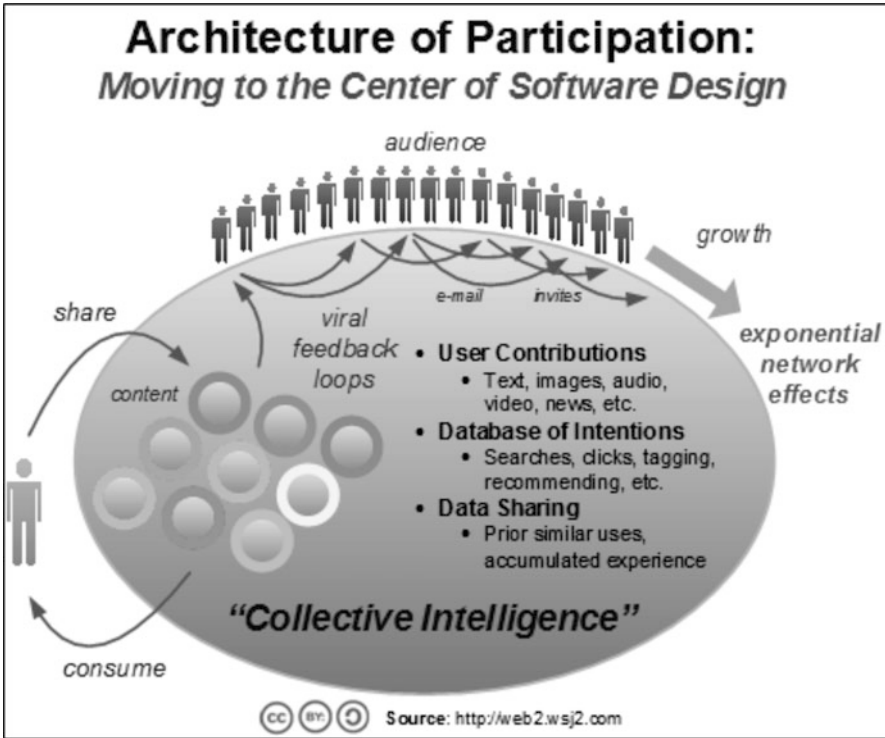


Fig. 2.6 Architecture of participation

of information in accordance with its context, facilitating natural-language search<sup>17</sup> and thereby supporting users to only see and get what they are looking for. The danger of such a technological oriented view of terms like “meaning,” “interaction” and “understanding” in relation to computerized processes is naturally meanwhile well documented and forms the state of debate. However, it is worthwhile to discover that technological advancements have so far been often surprisingly to educators. Nova Spivack (2007) believes that the Semantic Web is about a set of standards that will turn the Web into one big database, empowering software agents to perform Web-based tasks that individuals often struggle to complete on their own. And while Spivack (2007) is convinced that each era of the Web corresponds to a decade of development and relates to either the front-end or the back end of the

<sup>17</sup> Natural language search stands for the ability of search engines to answer full questions by enabling agents to read web pages sentence by sentence and return results by drawing on a general knowledge of language and in consideration of what specific concepts in the real world mean and how they are related to one another.

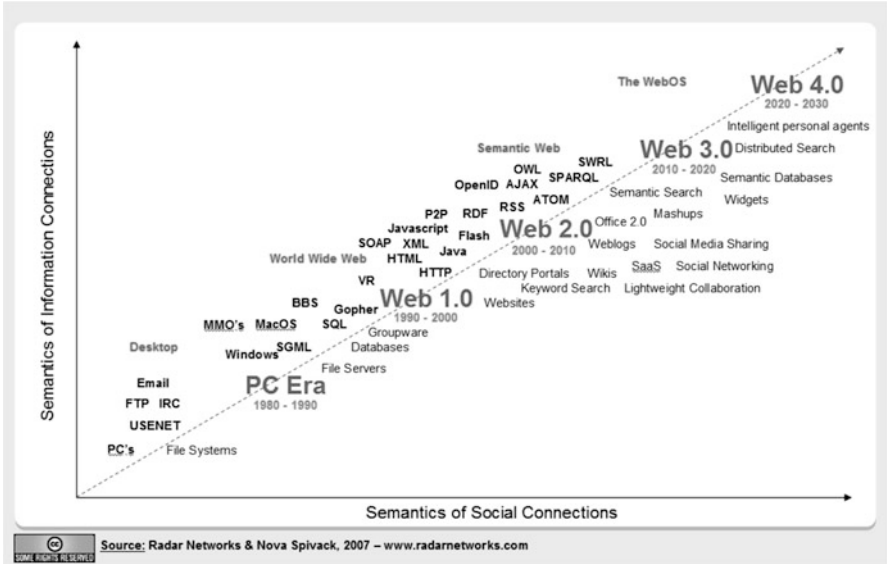


Fig. 2.7 Web 1.0 to Web 4.0 (Spivack 2007)

Web in terms of its focus of engineering,<sup>18</sup> Tim O'Reilly disagrees on this notion and predict that Web 2.0 is not about front-end but precisely about meaning and intelligence in back-end technologies.

*“The big difference [between Web 2.0 and the Semantic Web] is in the amount of noise you accept in your meaningful data, and whether you think grammar evolves from data or is imposed upon it. Web 2.0 applications are fundamentally statistical in nature, collective intelligence as derived from lots and lots of input at global scale.” (O'Reilly 2007c)*

If Web 2.0 is all about harnessing the collective intelligence of crowds to give information more value, then the future of Web 2.0, disregarding if one calls it Web 3.0 or the Semantic Web, is expected to allow and enable the Web itself to add meaning to small pieces of content by using metadata to “understand” the respective context of information and “autonomously” draw connections to related pieces of information (see Fig. 2.7).

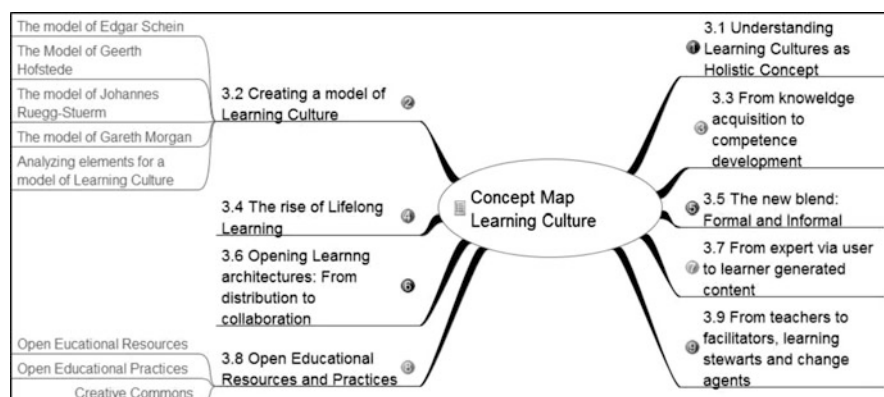
<sup>18</sup> Web 1.0: back-end decade, focus on the basic platform, the link structure, and navigation system (1990–2000), Web 2.0: front-end decade, focus on users, usability, social networking, and connecting (2000–2010), Web 3.0: back-end decade, focus on intelligence of agents, potential to automatically add meaning to loose, unchained information (2010–2020), Web 4.0: (2020–2030), etc.

## Chapter 3

# Emerging Open-Learning Cultures: Transforming Higher Education

While the last chapters focused on advancements from the field of web technology and tools which are used in higher education to enhance learning experiences, we are now going to have a close look at advancements in the field of learning models and learning designs. Emerging learning cultures are expressing as practices which take advantage of a greater freedom and empowerment of learning opportunities. These are cultures rather than open-learning methodologies or learning tools. The term “culture” emphasizes on expressing practices, everyday activities, values and value orientations (see Ehlers 2009 and Sect. 3.2). The term “cultures” expresses that learning experiences are transformed into experiences which are moving closer to everyday life and do not “only” occur in school or university, are characterized through more autonomy on the side of the learners, often constitute team relationships between learners and teachers, and again more often are much more driven by interests and current problems which learners wish to overcome than by a predefined and fixed curriculum which teachers are obliged to teach. Learning cultures as a term also signifies the multifaceted field which we depict as our field of research and practice. Transformation of education and learning can be seen in many different field and sectors of education and the following chapters will lead through the main areas of transformation we have analyzed (see Fig. 3.1).

In a presentation at the Innovations in Learning Conference by Brandon Hall, Stephen Downes (2007) used the metaphor of “walled gardens” to describe traditional learning cultures, based on an e-learning 1.0 approach—or in general at large the traditional way of thinking in silos within the higher education system. He expressed that e-learning 2.0 cuts holes into these garden walls, which leads to a new culture of learning. This new culture of learning is characterized by more autonomy for learners, leading away from a *model of knowledge transfer*, which is predominant in many educational contexts, to a model of mutual construction of knowledge and development of competences. The emphasis lies on making learners *fit* for an uncertain future, to support them in their development to becoming “reflected practitioners” (Schön 1983) and to supply them with a portfolio of acting competences with the help of which they can create their respective working and living contexts and innovatively develop them.



**Fig. 3.1** Concept map on elements of learning cultures

Naturally, *learning* itself is not invented anew by this method. The basic concept of learning remains the same. Rather, we realize new pedagogical approaches and didactic forms of how learning/teaching scenarios can be designed. Thus, we reach a new culture of learning. It challenges educational institutions by not being restricted to “walled gardens” but going beyond— physical as well as conceptual—limits of institutions. In the process, it challenges a large number of regulations and beliefs, such as curricula *written in stone*, traditional examinations, the “LMS to be used for all organizations,” etc. The following chapter will briefly describe some of the major trends that are influencing the field of learning as an additional result of the 2.0 movement. Within the subsequent chapters, these implications as well as the before mentioned will be referred to as the challenges and requirements of open-learning environments.

### 3.1 Understanding Learning Culture as a Holistic Concept for Higher Education

In the past 25 years, the concept of *organizational culture* has gained wide acceptance as a way of understanding human systems. From an “open-systems” perspective, each aspect of organizational culture can be seen as an important environmental condition affecting the system and its subsystems. However, only little efforts have been made so far to transfer the concepts to the field of *learning culture* for higher education.

Mabawonku (2003: 117) defines culture as the “definitive, dynamic purposes and tools (values, ethics, rules, knowledge systems) that are developed to attain group goals.” Kinuthia and Nkonge (2005: 2613) define these knowledge systems as “pertinent to people’s understanding of themselves, their world, and influences on education.” Taking a closer look at the very meaning of the word *culture*, we can

establish that it is stemming from the Latin term *cultura* which in turn is coming from *colere*, meaning “to cultivate.” Today it generally refers to patterns of human activity and the symbolic structures that give them their meaning (Williams 1983: 87). There are, however, different definitions of culture which reflect different theoretical basis of understanding human behavior. Kogan (1999) states that a common description or agreed on definition can hardly be found, given the vast and diverse coverage in literature. In the field of higher education, he argues, often an uncritical approach has been followed and introduced the concept in a rather unreflected way. However, it appears that for analyzing learning “regimes” and organizational development in a holistic way, the term bears so far unseen capabilities to combine individual and organizational conditions of professional behavior and development.

Jean Monnet, an important figure in the European unification process, once said “If I would again start with the unification of Europe, I would start with the culture and not with the economy.” (Haas and Hanselmann 2005: 463 and 464) A similar observation can be made when looking at the introduction of technology-enhanced learning strategies in higher education. Too often instruments and tools are introduced without respecting given cultural situations. While the quality of teaching and learning interaction between students and educators in higher education is influenced by a variety of factors, including attitudes and skills of teachers, abilities and motivation of learners, organizational backgrounds, contexts and values and the existing structures, such as rules, regulations, legislation and alike, the majority of approaches for technology-enhanced learning is focusing too much on only some of these factors, predominantly technology and content development.

Two opposing developments in higher education can be observed. On the one hand structures, rules and regulations gain importance, mainly with the rise of New Public Management approaches (Hood 1998: 212). On the other hand the interest in culture as underlying concept for organizational improvement in higher education performance is a dominant theme in much of the available management literature (Löffler 2005). In essence, the important emerging message is that an emphasis on values, norms, and cultures in an organization is easily combined with question of organizational accountability and performance (Martin et al. 2000; Stratton 2006). While the awareness for the networked and “total systems” character of technology-enhanced learning as a holistic concept in higher education is starting to spread (Wirth 2006; Harvey 2006), the basis for empirical research and conceptual development is missing to date.

Thus, there is a need to introduce an understanding of technology-enhanced learning from a more comprehensive perspective than just addressing single isolated factors. In industry this has been done in some cases already following the urgent need for continuous training and development, especially in high technology industries, like software companies. For higher education (and education in general) the idea of a total systems approach to technology-enhanced learning has so far had only little impact. Thinking of technology-enhanced learning in terms of a culture change, rather than limiting it to technology or content development or other single criteria and/or processes, is therefore of high relevance. Such a *deep*

understanding of learning culture in higher education—understood as the “constitution, measured against the needs and expectations of the stakeholder groups” (Seghezzi 2003: 13) has at least two dimensions: a *structural dimension* (rules, regulations, technologies in place, tools) and the dimension of values of an organization (relating to the commitment of its members, the underlying values, skills, and attitudes).

Learning culture is naturally connected to elements such as the organization of teaching and learning, available technology, organizational and academic structures, business strategies, and decision-making processes. Through its networked and interdependent character, it gains complexity which has the effect that it is often reduced to an everyday cliché that does not explain anything anymore. We will continue with an exploration of some models of organizational culture in order to construct a comprehensive-learning culture model later.

## 3.2 Creating a Model of Learning Culture

In this section we will provide an overview on concepts of organizational culture by different authors. The approaches are selected according to their influence on the scientific debate and secondly according to the diversity of approaching the field of organizational culture.

### 3.2.1 *Organizational Culture According to Edgar H. Schein*

Edgar Schein is one of the most prominent theorists of organizational culture. He defines culture as “A pattern of shared basic assumptions that the group has learned as it solved its problems of external adaptation and internal integration that has worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.” (Schein 1992: 373) As groups evolve over time, they face two basic challenges: integrating individuals into an effective whole and adapting effectively to the external environment in order to survive. As groups find solutions to these problems over time, they engage in a kind of collective learning that creates the set of shared assumptions and beliefs that we call culture. According the Schein, organizational culture is the learnt result of group experiences, which is to a large extent, unconscious (Schein 1992). He claims that culture is largely an invisible influence factor. It functions in a way that members of organizations live their values and act in their routines without consciously thinking about them. This aspect becomes interesting for the question if and how culture can be manipulated or influenced. Especially the assumptions are invisible and unconscious, whereas rituals, values, and symbols can partly be explicit. This characteristic also differentiates the culture of an organization from the management or the quality

**Fig. 3.2** Edgar Schein's model of culture



system of an organization. Whereas a system can be over time, described, analyzed, and measured, the culture is evolving largely without measures through interaction and to a large extent unconsciously developed. Schein considers culture to be a three-layer phenomenon (see Fig. 3.2).

1. **Underlying assumptions:** Underlying assumptions relate to the group's learned solutions to problems relating to external adaptation and internal integration. These solutions gradually become self-evident assumptions that cannot be called into question later. Schein (1985, 1992) also distinguishes so-called deeper underlying assumptions, which relate, for example, to views of human nature as well as to the nature of information and the human activity in question. These are strongly influenced by national culture, but an organization always forms its own view of them in its operations. In other words, they influence how the members of an organization perceive, think, and feel in matters relating to the organization. Underlying assumptions function as an unconscious basis for action and a range of decisions that shape the culture further. Culture is not static; it is in an epistemological sense, the creation and recreation of shared reality. In Weick's terms it can be said that organizational reality is an ongoing accomplishment (Weick 1993).
2. **Espoused Values:** The second layer in the Schein model consists of the organization's espoused values. These are apparent in, for example, the organization's official objectives, declared norms, and operating philosophy. Espoused values, however, do not always reflect a company's everyday operations. Most important in terms of operations is the culture's deepest level, namely its underlying assumptions (Fig. 3.1) (Schein 1985, 1992).
3. **Observable Behavior:** The third layer of culture consists of visible organizational processes and various artifacts. For example, dress codes and the general tidiness of the workplace are artifacts that tell something about the organization's culture. This level, according to Schein, is difficult to interpret, however, because it represents the most superficial cultural phenomena, i.e., only reflections of the true corporate culture.

Schein states that even though underlying assumptions may direct the actions of organizations' members, an organization's underlying assumptions cannot be directly deduced from these actions. Rather, the actions are always influenced by situation specific and individual factors (Schein 1999). Espoused norms and the official rules may be in conflict with everyday actions. They can also be in conflict



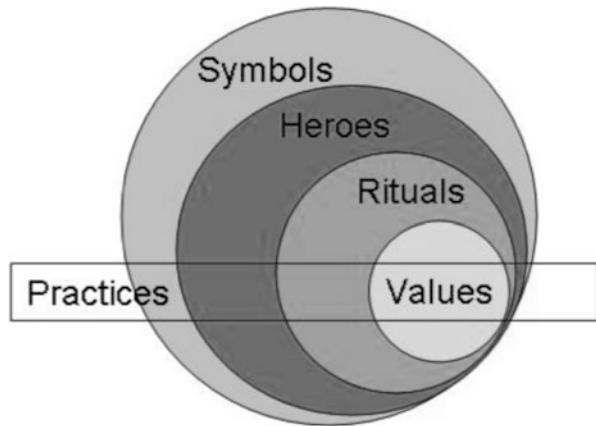
with the underlying assumptions, which in the end direct these actions. Organizations may not necessarily perceive this conflict themselves or they may even actively deny its existence. Schein (1999) emphasizes that an organization's culture is not merely a single new variable which describes organizations and which can be examined separately from the other variables that affect organizations' activities, such as the structure, strategy, market orientation, and the technology it uses. Organizational culture as a scientific concept strives to describe and explain activity in the organization as a whole.

### 3.2.2 *Organizational Culture According to Geert Hofstede*

Hofstede was conducting empirical research to analyze differences in style and the diversity of thinking and acting of humans. The studies were involving responses from over 100,000 participants and were largely conducted in the field of business (Hofstede 1991, 1997). He concluded that there is no such thing like a *universal* theory or approach to management for organizations and that organizational management cannot be viewed or analyzed as a separate process. Rather, it is interacting with the very context in which it is situated. Hofstede referred to culture as the "software of the mind" (ibid). He defined culture as "mental coding," which every member of a society, organization, or group experiences and according to which everyone can act coherently. In his research Hofstede (1997) understands culture as a set of typical attributes/behaviors (manifestations of culture) with four different impact depths: symbols, heroes, values, and rituals (Hofstede and Hofstede 2005)—which are shown in Fig. 3.3, the *cultural onion*. The center of the onion is formed by values. They are learnt from the beginning of life and are the most stable element—resistant against changes over time. The stability over time of the other elements of Hofstede's cultural model sinks from the core to the periphery of the onion. New rituals can be learnt over time, heroes established quickly, and symbols installed in organizations. Hofstede emphasizes that practices are concerned with all parts of the model. "Practices are the visible part of cultures. New practices can be learned throughout our lifetime" (ibid: 12). Practices represent culturally motivated behavior on the basis of values, rituals, heroes, and symbols. The four elements are briefly described as follows:

1. Symbols: "Symbols are words, gestures, pictures, or objects which carry a particular meaning only recognized as such by those who share a culture." (Hofstede and Hofstede 2005: 7) Cultural symbols can quickly change or disappear or new symbols are created or adopted from other cultures. Of course there are differences in the stability of symbols: Religious symbols and long introduced traditions usually have a higher stability against change and force higher sensibility in their use than those used by advertisements or as corporate labels.

**Fig. 3.3** Hofstede's model of culture



2. Heroes: "Heroes are persons, alive or dead, real or imaginary, who possess characteristics that are highly prized in a culture and serve as models for behavior." (ibid: 7) Heroes also can change in their value and role as a model for human behavior but are more persistent than symbols because individuals can identify themselves them.
3. Rituals: "Rituals are collective activities, technically superfluous to reaching desired ends, but which within a culture are considered as socially essential. They are therefore carried out for their own sake." (ibid: 8) Such rituals concern the usual way how people deal with each other (way of greeting, how to pay respect for each other's, how to eat properly, when, how and what to speak about). For example in rather formal business situations rituals play a big role and influence strongly the way people behave. Rituals may be different in different situations.
4. Values: "The core of culture is formed by values. Values are broad tendencies to prefer certain states of affairs over others. . . .Values are acquired early in our lives." (ibid) Values are the primary source of evaluation of our surrounding environment and bring about the basic idea for the way how to behave and decide in situations. They set the basic understanding of good and bad, natural and unnatural, moral and immoral, and other judgments.

### **3.2.3 Organizational Culture According to Johannes Rüegg-Stuerm**

In accordance with Geert Hofstede and Edgar H. Schein, Rüegg-Stuerm (Rüegg-Stuerm 2004: 50 p) describes the following elements as central for a corporate culture of businesses: norms and values, opinions and attitudes, stories and myths about important changes, and events of an organization, patterns of thought, arguments and interpretation, language habits and conducts, collective

expectations, and background convictions. He draws an interesting comparison between organizational culture and the semantics and grammar of a language. Culture is for an organization what semantics and grammar is for the language. He elaborates that a meaningful interaction and communication has always been based on semantic and grammatical rules and agreements even though nobody would explicitly notice it. “A 4-year-old child can make itself understood without ever having been exposed to explicit teaching of grammar or semantics” (Rüegg-Stürm 2004: 56).

In addition these rules and regulations are unfolding explicitly only in those moments when they are used, i.e., when communicating in a language and are in that specific moment reproduced and updated. An organizations’ culture is therefore comparable with grammar rules and semantic regulations of a language (ibid: 56). Members of an organization, belonging to the same *community of practice*, are fulfilling a constant collective, common, communicative interpretation process from the perspective of their specific contexts. They are making active influence on the differentiation of the organization’s cultural patterns through their discourse which is then, in turn, forming the new cultural structure and symbols.

### **3.2.4 Organizational Culture According to Gareth Morgan**

Gareth Morgan describes culture as “an active living phenomenon through which people jointly create and recreate the worlds in which they live” (2002: 141). For Morgan, the three basic questions of cultural analysis are:

- What are the shared frames of reference that make organization possible?
- Where do they come from?
- How are they created, communicated, and sustained?

According to Morgan, culture is expressing social realities. He explains that talking about culture usually means to refer to patterns of development which are manifesting in the knowledge, the beliefs, the values, the legislation, and the everyday rituals of a society (ibid: 156). Different societies and organizations have different patterns of social development. Morgan emphasizes that culture is a social and collective phenomenon which refers to the ideas and values of a social group and is influencing their action without them noticing it explicitly. Organizations are described as socially constructed realities which are existing in the heads and through the ideas of its members as well as in very concrete realities and relations (ibid: 186). Morgan emphasizes that organizations’ behavior can only insufficiently be described through rational explanations and mechanisms or objective reasoning but rather functions according to prevailing symbolic and subjective ways of interpreting reality. To understand and influence organizational culture, it is important to analyze how meaning is constructed in organizations and what are collective ways of interpreting reality.

**Table 3.1** Different approaches to organizational culture

Author	Approach	Cultural elements
Edgar Schein (1992)	Culture is a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration that has worked well enough to be considered valid	<ul style="list-style-type: none"> <li>• Values</li> <li>• Artifacts</li> <li>• Assumptions</li> </ul>
Gerent Hofstede (1991)	Culture is mental coding which allows acting coherently; it can be described according to symbols, heroes, values, and rituals	<ul style="list-style-type: none"> <li>• Symbols</li> <li>• Heroes</li> <li>• Rituals</li> <li>• Values</li> </ul>
Rüegg-Stürm (2004)	Culture is comparable with grammar rules and semantic regulations of a language, resp., a community	<ul style="list-style-type: none"> <li>• Norms and values</li> <li>• Opinions and attitudes</li> <li>• Stories and myths</li> <li>• Patterns of thought</li> <li>• Language habits</li> <li>• Collective expectations</li> </ul>
Gareth Morgan (2002)	Culture is a social and collective phenomenon which refers to the ideas and values of a social group and is influencing their action without them noticing it explicitly	<ul style="list-style-type: none"> <li>• Values</li> <li>• Knowledge</li> <li>• Belief</li> <li>• Legislation</li> <li>• Rituals</li> </ul>

### 3.2.5 Harvesting Elements for a Learning Culture Model

Schein (1992) states that organizational culture is the response to the challenges an organization has and to fulfilling its purposes (Ouchi 1981 argues in the same lines). It can be observed in the way the organization's members communicate, in their shared beliefs, shared values, symbols, and rituals. It can be compared to the implicit unspoken rules of communication which are never touched upon but everybody is aware of. The culture of one organization is distinct from other organizations, and its members have to undergo a phase of *enculturation* when they enter the organization. Organizational culture is not uniform and there can be *subcultures* and *subgroups* within an organization which have partly or totally different cultural patterns than others. Table 3.1 shows a summary of all elements which could be identified as important in the different approaches to organizational cultures. Although organizations can have different cultural patterns, it is important to harmonize them in order to create a sense of direction. Therefore communication and participation becomes important within organizations to harmonize different (sub)cultures and establish collective commitment. The approaches described have some elements in common and can be transferred to a concept of learning cultures in the following dimensions:

- Learning cultures just like organizational cultures are part of the overall organizational culture. Both cannot be separated. Different subcultures can be observed in organizations, like communication cultures, management cultures, and quality cultures. An analytic focus on an organization's learning culture can be established through the question in which way an organization is responding to challenges relates to learning and development and how it is fulfilling its learning purpose.
- Organizational culture is a multifactorial phenomenon and consists of several elements (depending on the approach chosen) which can be described and identified. For the previously presented approaches they are summarized in Table 3.1. Learning culture builds on these elements and represents configurations of these elements under the focus of organizational learning capacity.
- Considering the above-described approaches some common elements of culture can be identified and used in a learning culture model: All approaches are emphasizing *shared* values as a central element for organizational culture. Most of them consider shared basic and underlying assumptions and shared beliefs and symbols, rituals, and patterns as important. Learning culture is a socially mediated and negotiated phenomenon leading to shared results of meaning construction which is largely unconscious and only in some elements directly visible to the outside.
- Organizational culture—and in analogy thus learning culture—is always there and not a phenomenon which has to be established first. In all four presented approaches, the view of culture as something an organization is—rather than has—has been expressed. It is important to realize that the quality of educational processes is always using underlying assumption of what good teaching and learning is.
- Learning cultures have tangible and intangible, visible and invisible parts. A culture of learning can be further developed best when tangible, structural elements, like learning management mechanisms, tools, and instruments are developing *in parallel* with intangible elements like commitment, values, rituals, and symbols.
- Organizational culture is a social and collective phenomenon and individuals contribute and constitute culture through negotiation and interaction by establishing shared values, rituals, and alike.
- Culture is not a uniform but a diverse phenomenon—in organizations usually several cultures, among them also learning cultures, can be observed.

### 3.3 From Knowledge Acquisition to Competence Development

Recent literature on knowledge management and higher education (e.g., Alavi and Leidner 2001; Davenport and Prusak 1998; Drucker 1992; Malone 2004; Nonaka 1994) state that

1. Knowledge has become the most valuable means of production, that
2. Knowledge workers own their means of production, and that
3. Modern workforce loyalty comes not through the monthly paycheck, but through input and yield from knowledge in peer groups

We believe strongly that we are facing an even more rapid change and are already on our way from knowledge to competence orientation in higher education. By making connections possible, Web 2.0 technologies have the potential to enhance idea generation in firms which are based on the active interaction, collaboration, and the flow of information among modern knowledge workers in networks. But is this learning potential of Web 2.0 technologies perceived and practiced in higher education to develop the related competences of students? We see beyond an increasing awareness for the topic so far only marginal attempts to include Web 2.0—based learning activities in the educational practice and higher education curricula—despite the availability of a wide portfolio of Web 2.0 tools and their potential for communication and interaction. While some inhibiting factors like the insufficient level of IT competence and lack of incentive systems for faculty have been identified (Bates 2000; Euler and Seufert 2004; Hagner and Schneebeck 2001; Allen and Seaman 2007; Schneckenberg 2008), the reasons for such a poor performance remain somewhat unclear.

We describe in this section how Web 2.0 technologies can be used to transform educational processes shifting their focus from knowledge transfer to competence development. We suggest that such competences development approaches in higher education institutions can even enhance organizational learning processes in the companies students proceed after their graduation because being socialized in innovative Web 2.0 learning environments graduates can carry over their reflective learning and development skills and apply them to corporate environments (Mandl et al. 1992; Mandl and Krause 2001; Seufert 2007). A number of researchers like Albrecht (2005), Boyatzis (1982), and Mandl and Krause (2001) argue that the pedagogical design of programs in higher education and the learning routines of graduates which they have incorporated during their studies seem to impact their future capabilities as workforce to participate in the creation and nurturing of companies as learning organizations. For the field of business studies Boyatzis et al. (2008) re-emphasizes in his lifelong dedication that effective management competences can be developed in business education—if only learning in the sense of a holistic program to develop critical thinking skills, reflection, and social as well as emotional competences would finally become the main purpose of management education.

It is the general belief that mere knowledge transfer as a result of learning does not satisfy the demands of a new information economy. Considering this Westera (2001: 1), Siemens (2004a, b) and Ehlers et al. (2005: 24) accentuate that the continuously changing surrounding conditions will cause learning to lose the traditional emphasis on knowledge transmission. In effect this will be a shift towards more competence and skill-based approaches of learning. This perception is emphasized by the fact that the time that normally passes between the acquisition

and application of knowledge is usually considered to be too long and not adequate for the demands of the complex, interconnected, and barely predictable surroundings of today's world (Cross 2007), and the fact that the continuously increasing growth of knowledge in today's society demands learners to put more emphasis on social processes, their linkages, and interdependencies in order to attain "actionable knowledge" (Siemens 2005).

One reason for the growing importance of competence orientation in higher education is the increasing complexity that we face in modern business. In the globalized world of the twenty-first century, companies are confronted with a fierce economic competition and volatile markets. The uncertainty of the environmental contexts leads to a high dependency of companies on the capability of their workforce to learn and acquire new skills and competences in order to adapt to the changing external situations and job requirements. As a result companies raise the entry bars for young business graduates—a war for talent has been initiated and future managers need to be equipped with new competences to adapt to constantly changing work and life conditions in knowledge-based economies. The value of knowledge as production factor has led to a wide recognition that people are the most important asset for growth and employment in society and in companies (Drucker 1992, 2005). The increased requirements for graduates' job profiles on contemporary labor markets is pushing higher education institutions to reconfigure their curricula structures from knowledge transmission to competence-oriented learning outcomes. The objective is to meet the need of organizations for independent and reflective knowledge workers. The application of learning technologies, in particular, when it makes meaningful use of the potential of Web 2.0 technologies, can play a valuable role in the progress of higher education institutions towards more holistic educational models that focus on reflective learning rather than mere knowledge accumulation.

In this section we will present and discuss methods, tools, and scenarios to show how e-learning 2.0 can support the development of competences of future graduates, how it can foster reflection and competence development of students rather than remain in a traditional knowledge transfer scenario. It must be clear that there is and will be no unique and standardized definition of competence (Erpenbeck and Sauter 2007: 65). North (2005: 34) describes competences as the persons' abilities to transform their knowledge into problem-solving activities. Krogh and Roos (1996: 425) state, "We view competence as an event, rather than an asset. This simply means that competencies do not exist in the way a car does; they exist only when the knowledge (and skill) meet the task." Reinhardt and North (2003: 1374) define that

"[. . .] a person's competence basically describes a relation between requirements placed on a person/group or self-created requirements and these persons' skills and potentials to be able to meet these requirements. Competencies are concretized at the moment knowledge is applied and become measureable in the achieved result of the actions." (North and Reinhardt 2003: 1374)

As stated in the definition, competences are context-specific, personal, not imitable, and based on tacit knowledge. In addition, they depend on the activities for which they are used, and on the environment. Though competences cannot be communicated and described like, e.g., information, because they contain expertise and know-how, they are learnable, as well as evaluable with certain methods (Hasler Roumois 2007: 120; North 2005: 276). Abilities, capabilities, knowledge, as well as experiences are elements of a personal competence and enable a person to handle familiar and novel tasks (Frieling et al. 2007: 20f).

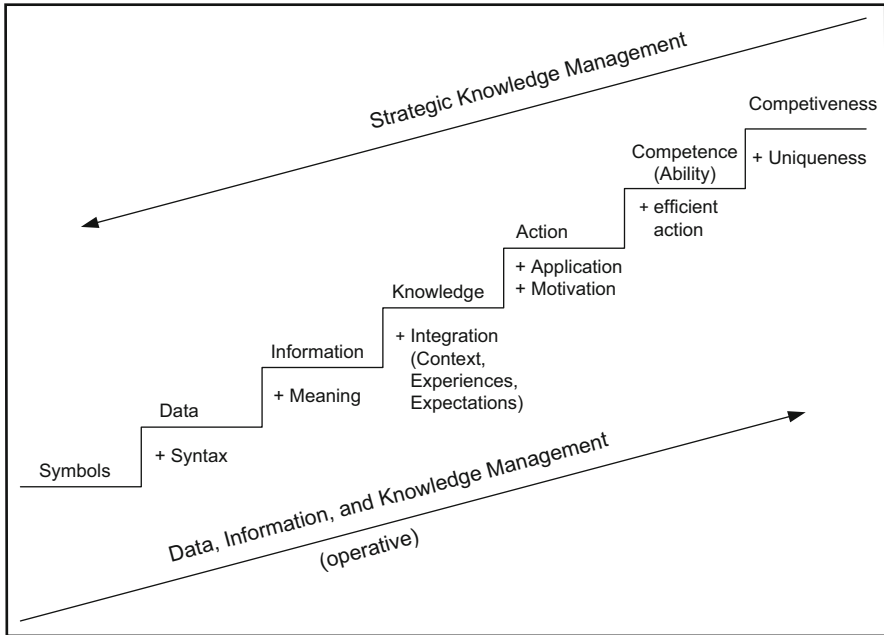
Hasler Roumois (2007: 119) declares additionally that competence is the ability to act self-organized. Self-organization means the ability to organize the own knowledge base, to evaluate it, to use it effectively for problem solving, and to further develop it. Competence-advancing workplaces must offer enough incentives for the informal learning that means the continually application of the employees' knowledge for solving problems. Competences can then be better developed (Hasler Roumois 2007: 121). The difference between knowledge and competence must be clear bordered. North (2005) developed the stairs of knowledge, where he circumscribes different terms like symbols, data, information, knowledge, action, competence, and competitiveness (ibid: 32). Figure 3.4 represents an adaptation of the knowledge concept of North (2005) by Wildt (2006). It shows that competence development builds on practical application, motivation, and the ability to assess actions against existing standards (to find out if the action was suitable). The concept shows the interrelation between knowledge, skills, and action. In the first step information are connected and on the second step they are applied and result in abilities. This is transformed in activity through motivation and will. Competence, however, demands for evaluation if the performed activity is suitable in a given context. For this, an individual needs standards (to assess what is suitable in the specific context)—they then lead beyond the concept of competence to professionalism. Wildt includes here also the responsibility towards clients and society. Especially the last three steps activity, competence, and professionalism are seen by Erpenbeck as difficult to be realized through e-learning.

Erpenbeck and Sauter (2007: 67–70) distinguish competences additionally from capabilities, abilities, knowledge, and qualifications. Capabilities can be obtained with a periodical training, for example, learning how to play an instrument or reading and writing (Erpenbeck and Sauter 2007: 67–68). Abilities base on psychical conditions and general characteristics of a person and control the actions and operations. Qualifications are certain skills, abilities, and capabilities a person has to contain in order to solve the daily work. Competences always require a high level of qualification, but in contrast to those, competences contain the ability to act self-organized and are subjective.<sup>1</sup> Competences base in general on explicit knowledge, capabilities, and qualifications, but contain additionally rules, values, and norms

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<sup>1</sup> For more details about the difference of qualifications and competence see Erpenbeck and Sauter (2007: 69), or Frieling et al. (2007: 21).





**Fig. 3.4** The stairs of knowledge (based on North 2005: 32)

(Erpenbeck and Sauter 2007: 68). Therefore see Fig. 3.5 (Erpenbeck and Sauter 2007: 69).

A decisive characteristic of competence is the ability to act self-organized. Self-organization is required in every situation which is problematic, and where decisions need to be made. Especially in a risk-oriented society and in changing environments, the ability to act self-organized is important (Erpenbeck and Sauter 2007: 65–66). In order to structure the competence-term, competence is often classified in professional, methodological, social, and personal competence (Frieling et al. 2007: 22):

- “Professional competences are abilities, capabilities, and skills, which are necessary for the accomplishment of work-specific requirements
- Methodological competences are work- and department-comprehensive abilities, e.g., problem solving competence or learning competence
- Social competences are, e.g., communicative or cooperative skills in situations of interaction
- Personal competences contains the attitude, values, motives, self-perception and self-organization” (Frieling et al. 2007: 22, translated from German)

Erpenbeck and Sauter (2007: 66) classify competences in personal, activity-based, functional–methodological, and social-communicative competences. This classification is similar to the above classification. The authors make clear, that in a risk-society, no qualifications or expertise can handle the upcoming problems anymore. Competences are therefore required, to handle new, unknown, and complex situations. Personal competence contains a lot of self-confidence, courage, and

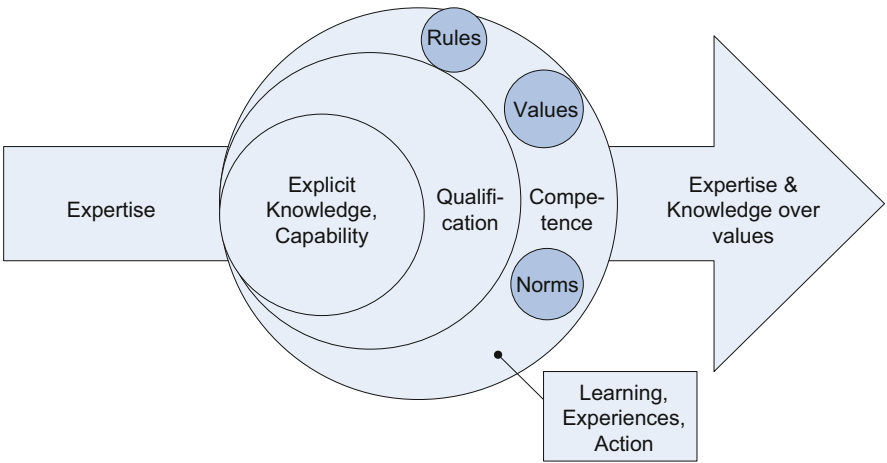


Fig. 3.5 From knowledge to competence (based on Erpenbeck and Sauter 2007: 69)

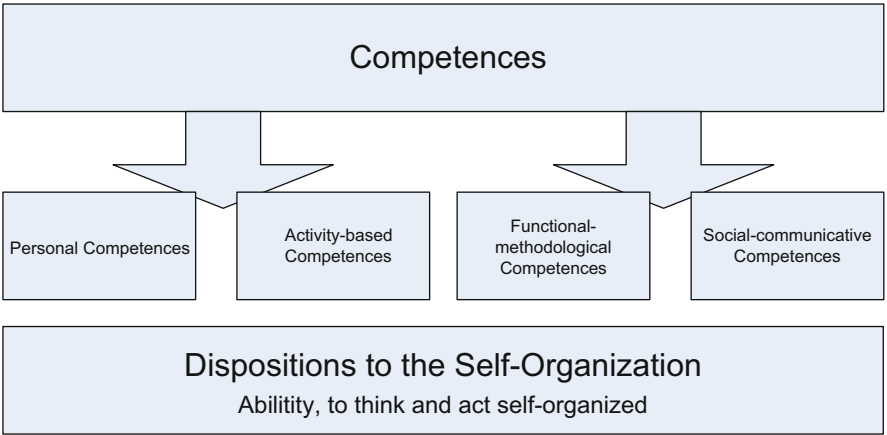


Fig. 3.6 Classification of competence (based on Erpenbeck and Sauter 2007: 67)

creativity. The functional–methodological competence bases on experiences, motives, and hopes, which are necessary to solve a task. The social-communicative competence contains persuasiveness, willingness to agree, and negotiate and openness—it is important for teamwork. The strength to enforce its conception is known as the activity-based competence (Erpenbeck and Sauter 2007: 66). This classification of competence can be seen in Fig. 3.6 (Erpenbeck and Sauter 2007: 67).

We can make a distinction between formal instruction and competence development by outlining the difference between “qualification” and “competence.” *Qualifications* are one integrative element of *competence*, but they do not necessarily include a moment of performance—the responsible and adequate action within a

given context, while integrating complex knowledge, skills, and attitudes (van der Blij et al. 2002). Qualifications represent descriptive educational learning objectives, which are taught in formal pedagogical settings like study courses. Acquired qualifications are directly measured through knowledge tests and certified by educational institutions. Competences on the other end include the dispositional ability to *efficiently act in complex situations*; they cannot be taught, instead they require pedagogical approaches which are based on active learning and experience-making. The results are *dispositions for adequate and professional behavior*. They cannot be directly measured but need to be interpreted through an analysis of the performance of individual in an authentic context.

### 3.3.1 How to Develop Competence?

The development of competence is thus relying on a high level of individual activity. However, they play an important role in educational scenarios as the ultimate objective of professional development. McClelland (1973, 1982) emphasize this view and define competence as a prerequisite to master specific challenges in a concrete field of activity. They assume that individuals can improve given and gain new competences through learning and experience and give a first hint how competences can be developed—through learning.

The learning, which takes place, and the experience, which is made in authentic situations, is seen as the basis for a process of individual or collective competence acquisition. Weinert (1999) supports this view and states that learning is a necessary condition for the acquisition of prerequisites that enable a successful mastery of complex tasks—which is one description for competence (Weinert 1999: 7, *ibid.* 2001: 63). Thus, competence is considered a learnable human trait. One important aspect for the role of learning in competence development is the unstable character of the learning process. Learning is sparked and initiated through a state of irritation, which is caused by action that takes place in an unstable, nonroutinized, and complex context. In this unfamiliar and complex context, the effect of individual or collective action is not predictable, as any experience on the effect of action is lacking. Challenges under such uncertain conditions lead to a *labialization* of the existing value system—the learners have to learn through *concrete experience* about the effects of their actions in a new and complex context. When the action has been completed, the gained experience and knowledge is incorporated into the existing value system and thereby modifies existing attitudes of the learner (Erpenbeck 2005). Thus, to develop competences requires authentic challenges in uncertain contexts.

Friedrich and Mandl (1992) link competence development in the field of cognitive psychology to the model of *active learning*, which describes learning as an active reception and processing of information. The reception and assembling of information is characterized as active, self-directed, and constructive process—a learner acquires knowledge, skills, and abilities through active reflection on a

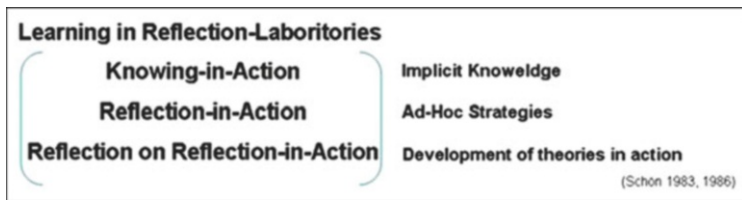
specific learning object. In this view, individual competence development follows a certain pattern: It starts with the acquisition of accessible and available knowledge, which is required for competent action. In the process of learning, this new knowledge needs to be interpreted, classified, and integrated into existing body of knowledge and into the value system of the learner. Learners' progressively develop strategies for *adequate* action in specific contexts which consist of knowledge, values, skills, and experiences—the dispositional competence components of the learner. When a motivation to act adds to the other dispositional competence components, the performance strategy of the individual learner will realize in action. In this way, the learner's performance strategy results in action competence, which Erpenbeck et al. (1999) define as self-organized, dispositional ability to act, while integrating knowledge, values, experiences, and skills (Erpenbeck et al. 1999: 163).

Finally, competence development is facilitated in complex contexts. To cope with complexity, individual actors have to acquire and to integrate new knowledge, to apply this knowledge within a specific action, and to assess and to value the results of the action. This way, learners acquire competences in confrontation with their immediate environment.

### 3.3.2 *Designing Learning for Competence Development*

What are characteristics of competence-based learning environments? One key assumption which has been stated above is that learning has to be active and participative. Mandl and Krause (2001) propose a concept of constructivist learning as pedagogical framework for the design of a stimulating and interactive learning environment. This concept considers learning as a self-directed process, which builds on the learner's active construction of knowledge. When learners acquire new competences, their existing body of knowledge, their experiences, and their attitudes influence their learning process. Learning of an individual learner depends on their self-directed and active knowledge construction (Mandl and Krause 2001: 4ff; Zawacki-Richter 2004: 262)—a call to rethink learning environments. They have to be active and engaging and learner-centered, concepts which are long discussed but often not practiced. To put them into practice three key assumptions should be met (Baumgartner and Welte 2002):

1. Regular Articulation and Reflection (Mandl et al. 1997): Reflection is seen as a key component for competence-based learning. Students are seen as reflective practitioners (Schön 1983) with the aim to develop the competence to reflect on their behavior. The reflection takes place during the action (reflection-in-action) as well as after the action has been finished (reflection-on-action) and includes the action itself as well as the contextual conditions for the action. Students gain theoretical insights in form of reflected experience in this process, which contains contextual knowledge, but includes in addition generalized knowledge which is relevant beyond their specific action context. The process of reflection



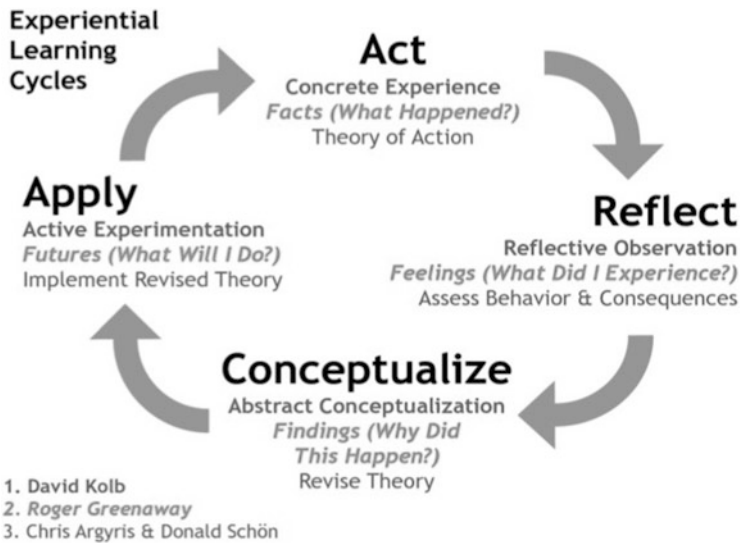
**Fig. 3.7** Learning environments as reflection laboratories

follows the underlying rational of making the implicit actions, assumptions, and knowledge explicit to formulate so-called ad hoc strategies in situations where problems are perceived (Baumgartner 1993: 250ff; Mandl et al. 1997). Once learners have reflected on the results of their decisions and actions, they incorporate and interiorize the learned experience into their internal system of values and into their network of relationships (see Fig. 3.7) (Erpenbeck 2005; Graumann 1982).

The experiential learning theory of Kolb and Kolb (2005) is also emphasizing reflection as an important component (see Fig. 3.3). Kolb 1984; Kolb and Kolb 2005) describe experiential learning as active experimentation which leads to a transfer of learning from a current to a new cycle. They are using a holistic approach for the design of learning environments. Their model emphasizes that learning needs to combine phases of action and reflection; and learning is heavily based on interaction (see Fig. 3.8).

2. Use of Learning Diaries/E-Portfolios<sup>2</sup>: Articulation and reflection in learning environments can be fostered through the use of an e-portfolio for reflective writing through writing assignments that require students to engage in critical and reflective thinking. Section three shows how to integrate reflective writing using weblogs in educational scenarios. Reflective writing can include the use of readings, observation, and experience related to the learning situation in question. It can be highly structured as in a take-home exam or unstructured as in stream-of-consciousness writing. Reflective writing may also be inwardly or outwardly focused depending on the degree to which reflection is directed towards self-awareness or development of domain content (Varner and Peck 2003).
3. Learning with complex problems in uncertain contexts: Schön (1983, 1986) has developed the concept of the reflective practitioner which is very much at the heart of helping students to use reflection as a tool in order to progress on their way towards becoming professionals and acquire competences. It is the self-responsible identification and definition of the problem, which creates an attitude-based relation of learners to learning tasks. This means for the

<sup>2</sup>E-Portfolios are web-based information management systems which use electronic media and services. Learners can use E-portfolios as digital archive for personal annotations, comments, collecting relevant material or documenting their learning artifacts.

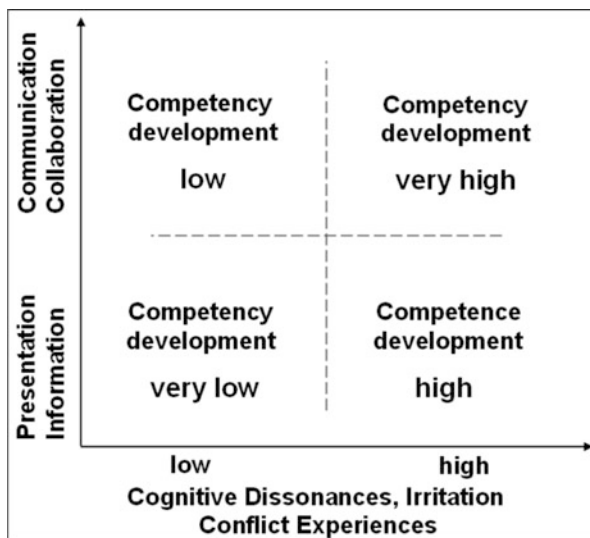


**Fig. 3.8** Reflection cycle

pedagogical design of a course unit that a complex learning problem is developed by the students themselves. Main pedagogical objective is that students are encouraged to make autonomous decisions in an uncertain and complex context and that they learn how to take and to share responsibility for the decisions which they have taken—in an ideal scenario the learning environment reflects to a high degree the complexity and uncertainty of decision-making in real work contexts (Salzgeber 1996: 282ff).

In addition to these three basic elements, Erpenbeck (2005) points out that learning environments have to include a component of value- and experience orientation in order to foster competence development. Values are challenged when decisions have to be made in uncertain contexts when dealing with authentic problems. Once learners have reflected on the results of their decisions, they incorporate and interiorize the learned experience into their internal system of values and into their network of relationships (Erpenbeck 2005; Lewin in Graumann 1982). Erpenbeck (2005) puts forth that technology-enhanced learning has great difficulties in creating experience related and value-oriented learning opportunities, a problem which can only be solved in relation to the problem of interiorization (Fig. 3.9). Interiorization—or incorporation/internalization—of new values is the result of acting in uncertain, challenging, nonroutine, and complex contexts. As a result of being urged to act in such learning contexts, learners start to question their own values and pre-assumptions. Values which are serving as structuring elements for every activity are then labialized in such contexts. Having successfully coped with such a situation, the interiorization of new values takes place. In case of successful rule-, value-, and norm interiorization, technology-enhanced

**Fig. 3.9** Competence development through technology-enhanced learning (based on Erpenbeck 2005)



learning can become a full-scale alternative to competence-based face-to-face learning environments in which not only subject matter knowledge can be distributed but also action competence acquired and experiences made and expertise learnt. Technology-enhanced learning can then make the difference. Interiorisation thus means the acquisition of rules, values, and norms under the influence of individual emotions and motivations.

The interiorization process represents the greatest challenge for every technology-enhanced learning environment if it wants to be competence oriented. It requires social interaction, conflicts and irritation, problem solving, and a high degree of authenticity in every learning situation.

Learners have to interact in problem-oriented scenarios in groups and confront their own values, solutions, and situations with those of other individuals and groups. Collaboration, labialization, and irritation are therefore the basis for competence-oriented technology-enhanced learning (Erpenbeck 2005). As it is suggested in the headline of this article, e-irritation is a necessary component in order to foster the process of labialization and stimulate the development of competences. The consequences are clear: in order to stimulate potentials for competence development and initiate labialization and interiorization processes, technology-enhanced learning environments have to follow a clear problem-oriented, authentic, and collaborative didactical design. The development of action competence can—in this sense—be supported through learning environments which are designed according to the principles of situated learning and cognition (Mandl/Krause 2001). The next chapter is suggesting the model of Computer

Supported Collaborative Learning (CSCL). It is argued that it can make the difference because it carries a strong potential for action competence development.

Erpenbeck (2005) emphasizes that technology-enhanced learning can be used for acquiring knowledge and information quite effectively. When it comes to creating learning opportunities which aim to develop competencies and allow learners to make own experiences or participate in social interactions, however, technology-enhanced learning often fails to perform. Erpenbeck differentiates between competence and qualification. *Qualification* as a concept concerns skills to perform, predefined, externally required actions and reactions by using certain means and procedures which can be directly learned. *Competency* on the other hand is a concept which relates dispositions and skills which are in principal unlimited and enable individuals to act self-organized in a principally undetermined future. Competences therefore are dispositions of self-organization (Erpenbeck et al. 1999; Erpenbeck and Heyse 2001).

Erpenbeck (2005) emphasizes that technology-enhanced learning can be used efficiently for teaching but has difficulties to provide a learning environment in which learners solve authentic problems in social interaction with other learners—and thus acquire value and knowledge; this is especially true for experiences. This constitutes a principal contradiction: On the one hand technology-enhanced learning and information technology is more and more introduced to educational scenarios on all levels. This can be seen as an irreversible process. On the other hand the transition from traditional vocational and ongoing training to vocational competence development is also not reversible. The problem is that existing educational technologies do not meet the needs of modern vocational competence development.

### 3.4 The Rise of Lifelong Learning

The development of key competencies is an imperative for today's abilities to act in a more and more complex world—this is the central challenge of lifelong learning. As shown in the previous technology-enhanced learning has proven to be quite effective in delivering information. When it comes to competency development, however, today's technology-enhanced learning solutions often lack authentic learning scenarios which enable learners to solve problems in social interaction with each other—a requirement necessary for competency development. The concept of lifelong learning has made a great carrier in the last 30 years. It can be analyzed from different perspectives of theory and practice: from the point of view of educational science, as leitmotiv in educational policy, as an instructional design concept, and under the perspective of subjective learning and acquisition processes.

Lifelong learning is more and more coming to reality for more and more people and has become an important driver for individual and collective development in modern societies. It has also separated continuously from the level of adult education as its primary institution and is diffusing into educational sectors, institutions,



and in a variety of individual learning modes and locations (Kade and Seitter 1996). It is not de-institutionalizing but the institutional settings in which it takes place undergo a process of diversification. This creates the dynamic network character of the concept today. Kade and Seitter (1996) analyze the concept in the light of three different perspectives:

1. *Lifelong learning between emancipation and obligation*: From a positivistic point of view, lifelong learning is a medium to enable the individual to participate in a continuously changing world and develop their own concepts of life. From a more critical point of view, lifelong learning is seen as an obligation which urges individuals to update their skills in a more and more economically driven world.
2. *Lifelong learning between avoiding risks and creating risks*: In a more and more multioptional society, biographies are always situated between new options and possibilities on the one side and new risks and restrictions on the other side. Lifelong learning can be conceptualized as a process of avoiding risks. The already introduced concept of key competences, for example, tries to enable people to take act competent in an unforeseeable future. Lifelong learning in itself is at the same time part of the process which constitutes the risks in a constantly changing society.
3. *Lifelong learning as a possibility of enjoying life*: In this perspective, lifelong learning is not an obligation to prepare for an unforeseeable future but a process to enrich the present life. Learning is not mainly used to compensate a deficit but rather to enjoy the present spare time (Kade et al. 1993; Lüders et al. 1995).

In all of the summarized perspectives, lifelong learning has to be flexible and—at least in the first two approaches—has to prepare individuals for an insecure and unforeseeable future. This means that not *qualifications* for certain restricted areas and defined purposes are in the focus but rather *competencies* which enable individuals to act in potentially unforeseeable situations. Especially competencies and not qualifications are therefore necessary to meet the not predefined future challenges.

Against this background we can identify a problem in the field of e-learning. Knowledge, resp., information can be delivered quite effectively with e-learning. Methodological or domain-specific competences are much more difficult to achieve with e-learning, and experiences and expertise can only be acquired through activities and self-performed problem solving (Erpenbeck 2005). It becomes even more problematic when it comes to personal and social-communicative competencies because they always contain values and are embedded into cultural contexts. They are not learned like knowledge but are rather acquired through cognitive dissonance processes and conflicts (Erpenbeck and Weinberg 1993). These can be induced in social rather individual learning situations. Technology-enhanced learning therefore has to focus more on communication and collaboration than on information and presentation. To make technology-enhanced learning

valuable learning opportunities for individuals in their LLL processes, it becomes more and more necessary to focus on providing authentic social learning situations.

### **3.5 The New Blend: Connecting Formal and Informal Learning**

The metaphor of lifelong learning makes sure cannot mean that learners have to take classes for the rest of their lives. Rather, new forms of learning have to be found which are designed to be self-directed, quick, flexible and aimed at problem solving. Informal learning “which is developed in oblique life and experience contexts outside of the formal educational institutions” (Dohmen 2001), is becoming the focus of the discussion once more. Colley et al. (2002) summarize that the use of the terms informal and formal learning have a fairly long history: At the center of these debates lie conflicting claims about the inherent superiority of one or the other. According to Scribner and Cole (1973), much of the research and theorizing about learning in advanced industrial societies, prior to the date when their paper was written, focused primarily upon the formal. Formal learning, when effectively provided, was assumed to have clear advantages. Colley et al. (2002) state that it opened up the accumulated wisdom of humankind, held in the universities:

“This sort of accumulated, recorded and propositional knowledge allowed each generation to know more and better than their predecessors, as science (or art) advanced. Furthermore, such knowledge was generalizable – it could be used or applied in a wide range of contexts and circumstances. Formal learning was equated with education in schools and universities.” (Colley et al. 2002)

In “Cognitive Consequences of Formal and Informal Education” Scribner and Cole (1973) established a counter view to the superiority of formal learning, from sociocultural or situated perspectives on learning. They claimed that many things are learned more effectively through informal processes. One clear example of this is language learning. As Lave and Wenger (1991) show sophisticated learning takes place in communities, even without formal learning provision. Furthermore, researchers claimed that formal learning was not context free (Brown et al. 1989) and took different forms in different cultural traditions (Lave 1996). Sometimes research are even going so far to question the usefulness of formally acquired knowledge since the “transfer” of learning to practice seems to be problematic. As Lave (1996: 151) argues “Learning transfer is an extraordinarily narrow and barren account of how knowledgeable persons make their way among multiply interrelated settings.”

### **Infobox: Definitions for Formal, Nonformal, and Informal**

**Formal learning:** learning typically provided by an education or training institution, structured (in terms of objectives, learning time, or learning support), and leading to certification. Formal learning is intentional from the learners' perspective

**Non-formal learning:** learning that is not provided by an education or training institution and typically does not lead to certification. It is, however, structured (in terms of learning objectives, learning time, or learning support). Nonformal learning is intentional from the learner's perspective.

**Informal learning:** learning resulting from daily life activities related to work, family, or leisure. It is not structured (in terms of learning objectives, learning time, or learning support) and typically does not lead to certification. Informal learning may be intentional but in most cases it is non-intentional (or incidental/random).

(Based on European Commission 2001)

Thus, informal learning is argued to be superior to the formal. Sfard (1998) presents a critique of these debates and contests around conceptualizing learning by contrasting two basic metaphors. For many years, she argues, almost all research and theorizing about learning adopted a metaphor of learning as acquisition, either explicitly or implicitly. From this perspective, the process of learning is always subordinate to the acquisition of something (skill, knowledge, value, attitude, understanding, behavior) which has been acquired through that process. The roots of this form of thinking lie in psychology, in both its behaviorist and cognitive forms. Sfard (ibid) contrasts this metaphor with another increasingly dominant one, that of learning as participation (Brown et al. 1989; Engeström 1999, 2001). For Lave and Wenger (1991), for example, the most significant attribute to learning is belonging to a community of practice. Learning, they argue, is the process of becoming a full member, which they term "legitimate peripheral participation." We cannot learn without belonging (to something) and we cannot belong without learning the practices, norms, values, and understandings of the community that we belong to. Sfard (1998) argues that neither metaphor is adequate for expressing the full complexities of learning on its own.

Informal learning comprises, as is known today, 70 up to 80 % of all learning activities. In his latest book, Jay Cross talks of only 10–20 % of all learning being acquired in formal learning scenarios while 80 % happens through informal learning. He demands a "formalizing" of informal learning and an "informalizing" of formal learning. Nevertheless, formal education has a much larger meaning today than the informal one (Cross 2003). Empirical studies confirm this issue. The result of a survey conducted in spring 2003 in the 15 member states of the European Union by the European Centre for the Development of Vocational Training (CEDEFOP) shows that most of the citizens are of the opinion that they

**Table 3.2** Traditional vs. new thinking (based on Cross 2007: 10)

	Traditional thinking	New thinking
Understanding by...	Dissecting into parts	Seeing in terms of the whole
Information is...	Ultimately knowable	Infinite and unbound
Growth is...	Linear, managed	Organic, chaotic
Managing means...	Control, predictability	Insight and participation
Workers are...	Specialized, segments	Multifaceted, always learning
Motivation is from...	External forces and influences	Intrinsic
Knowledge is...	Individual	Collective
Organization is...	By design	Emergent
Life thrives on...	Competition	Cooperation
Change is...	Something to worry about	All there is

learn predominantly in an informal way. The nonformalized acquisition of competences at the place of work, either by exercising one's profession (44 %) or by talking to colleagues or reading of subject-related literature (41 %) has the largest meaning next to acquisition of competences taking place outside of gainful employment in the private sector (69 %). The other results of a current study (see Table 3.2) also point to the meaning of informal learning contexts. According to it, formal advanced training is only the smallest part of advanced professional training. The majority of employees considers informal learning contexts in work and family life more often than not crucial respectively the only main learning context in which they have learned most of what they know: 87 % of the people asked stated that they had learned most of their knowledge in informal learning contexts, compared to only 13 % who ascribed the largest meaning to formal learning contexts (Baethge and Baethge-Kinsky 2002).

As learning shifts from knowledge transfer to more skill and competence-based approaches, informal learning is considered by many experts to be a substantial element of e-learning 2.0 and one of the most essential factors for its success (Calvani et al. 2006). Underpinning this perception, Schenkler proclaims that the case of people using Web 2.0 tools and applications to support their own learning is more about informal learning than e-learning, and consequently calls it Learning 2.0. "E-learning 2.0 is already here [...] actually, it's not technology-enhanced learning—it's more like what Jay Cross calls "informal learning." It is people using Web 2.0 tools and applications to support their own learning" (Schenkler 2008: 3). Cross (2005a) however believes that the concept of technology-enhanced learning 2.0, informal learning, and connectivism are basically approaching one topic from different directions and end up in nearly the same place. Despite the fact that there are various notions of how to distinguish between formal and informal learning (Colley et al. 2002; Cross 2005b; Downes 2006b), it is important to emphasize that informal learning, however one defines it, is based on another paradigm of thinking than formal learning approaches. Cross (2005a, b) as the above table shows, distinguishes these to paradigms according to several different aspects. Based on this change in the paradigm of thinking the Table 3.3 presents the distinctions between formal and informal learning (Cross 2007; Beckett and Hager 2002: 99).

**Table 3.3** Formal vs. informal learning

	Formal learning	Informal learning
Approach	Single capacity focus, e.g., cognition	Organic/holistic
Context	Decontextualized	Contextualized
Intentionality	On purpose	Incidental
Timing	Scheduled/planned	Whenever/unplanned
Location	Fixed	Anywhere
Contract	Written	None
Structure	Highly structured	Unstructured
Control	Strict	Laissez-faire
Outcomes	Specific	Unstated
Content	Certain	Fuzzy
Learning as. . .	Passive spectator	Activity- and experience based
Interdependency	An end in itself	Dependent on other activities
Motivation	Stimulated by teachers/trainers	Activated by individual learners
Mode of operation	Individualistic	Often collaborative/collegial

A range of studies have been exploring issues surrounding the use of social software and participation in social networking environments. For example, early research findings point to (Trinder et al. 2008):

- Strong association between use of sites such as Facebook and the students' development and enhancement of their social capital as well as their psychological well-being (Ellison et al. 2007)
- Social networking sites fostering increased civic participation (Min 2007; Khokha 2006)
- Affordances of social networking environments for knowledge construction processes (Paulus 2007)
- Emergence of new types of literacy practices of "participation" and "remix," whereby the former questions the dichotomy of consumption and production and the latter challenges the notion of "copying and pasting" inherent to this dichotomy (Perkel 2006)
- Games and simulations fostering development of metacognitive skills such as problem solving, interpretive analysis, and strategic thinking increased motivation (Cope and Kalantzis 2000)
- Affordances of these technologies in terms of transfer of knowledge between various contexts, such as between online and offline realities and between local and global networks (Mejias 2005)

With e-learning 2.0 informal learning experiences can be connected and linked to formal learning sequences. That, what motivates people to pursue their interests, to find out about their hobbies, or to learn what they are passionate about with peers and in their communities, can benefit formal learning scenarios. There is not one right mode for learning but both modes can benefit each other when being combined. It is the expertise of educational professionals to find valid links between the informal learning worlds of their students and the higher education formal context.

Why not send them out to discuss in expert communities what they just worked on before in class? Why not initiate a student conference to bring in community-related interaction and social networking from outside into the traditional learning process?

Trinder et al. (2008) emphasize the following aspects for bridging formal and informal learning within higher education institutions.

In order to bridge formal and informal learning within higher education, it is important to embrace social technologies and foster exchange between the formal world of teaching and learning within the walls and learning outside the walls of the university. This sharing and working together helps unearth different views of what's happening, and allows negotiation of shared understanding. It's about dealing with misconceptions, ambiguity, and learning together. When done well, learners work together to share their understandings and to develop their ability to apply it to meaningful problems. Several meaningful goals accelerate learning, including connecting conceptual knowledge to personal experience, elaborating conceptual knowledge to other ideas, and applying that knowledge to solve problems. Our social learning tools do just that. The following are some ideas how informal learning can be tight into formal learning scenarios.

#### **Recommendations on pedagogical issues**

1. Embrace the thinking behind the use of social technologies in formal learning contexts
2. Support the development of students' skills in social networking in relation to formal learning contexts
3. Rethink induction processes in relation to social technologies and formal learning
4. Devise new assessment practices more appropriate to "learning as collaboration and participation"

#### **Recommendations on sociocultural issues**

1. Build a campus culture rich in social networking opportunities

#### **Recommendations on organizational issues**

1. Build staff capacity in the use of social and associated technologies
2. Share responsibility for development across staff and students
3. Develop institutional strategies that provide reward and recognition for innovations in teaching

#### **Recommendations on technological issues**

1. Support the use of student tools within institutional settings
2. More emphasis should be placed in HE on mobile devices and universal free access to high-speed networks from anywhere within the campus.

- Reflection about learner's context: Ask learners to bring in reflections from their own context: hobbies, family, jobs, study groups into the learning process. Ask them to describe and build cases from their own experience and apply the theories and models discussed in class to it.
- Personalize learning with journals: Journals can be a way for individuals to personalize their learning. By reflecting on their learning, they make explicit what remains often implicit. They become aware and step by step professional of their learning processes, create their own language for their learning, and see what works and what doesn't for them. They can explain past events in new light, or indicate how they intend to change their behavior as a consequence, and they're making connections to prior knowledge and their expected patterns of behavior. By having a requirement to regularly blog personal revelations about how this information relates to their experience, as well as how they anticipate applying the information in the future, learners are performing powerful cognitive processing. Making those thoughts available to others, and receiving feedback from mentors or peers, is a real opportunity to explore and benefit from not only the reflection, but the feedback that can help refine and shape understanding. A method which has proven to work for this is the so-called Microarticle.
- Micro-articles: Micro-articles spanning at most one page of text. They describe a problem with aid of a story and a solution. The documentation of the problem as a story enables the reader to understand the context much better. Micro Articles aim at the easier documentation and locating of very context-bound knowledge. A Micro Article may be structured as follows:
  - *Topic*: short characterization of the content as title
  - *Story*: short narration of the facts
  - *Insights*: gained experiences depicted in brief
  - *Conclusions*: conclusions drawn from experiences
  - *Subsequent questions*: open questions as thinking impulses

The sections "conclusions" and "subsequent questions" may be left. Micro-articles are suitable for documenting within a learning diary the most importing learning experience of the day. Especially when students begin to use blogs and learning diaries, they find it helpful to follow a certain structure.

- Learner's discussion questions: Ask learner's to create discussion questions for a certain topic and then post them into a discussion forum. Discussion forums provide a useful channel for learners to each pose their answer to the question and then respond to others. Even a simple requirement that learners post a thoughtful response to a thought question, and then comment in a relevant way to another (not just saying "great"), constitutes the valuable additional processing that leads to retention.

### Stories About Bridging Formal and Informal Learning

- Groups of schoolchildren were provided with handheld mobile devices which they could use to write in, record audio, take pictures, access reference resources online and, with satellite navigation, pinpoint their exact location. The students made a multimedia map of their walks around Deptford, carrying out experiments and recording findings—capturing all that they found significant about the environment. These records could then be accessed by later groups and extended or edited into an evolving and increasingly rich and diverse resource. (Sutch and Sprake 2005)
- Museums, galleries, and heritage sites seek to engage visitors in the artifacts they exhibit and encourage participation in the learning space provided. In Tate Modern’s multimedia pilot study, location-aware applications delivered content that is appropriate to the visitor’s location within the gallery space. Visitors used portable, screen-based devices to see video and still images providing additional context for the works on display. They could listen to experts talk about details of a work, while the details were highlighted on the screen. Visitors could use interactive screens to answer questions about artifacts or to create their own soundtrack for a work by layering sound clips. Visitors could have additional information e-mailed to them. Messages could be broadcast to users during the tour. (Proctor and Burton 2003 reported in Lonsdale and Beale 2005)
- Doctors, nurses, and other medical professionals interact with patients through patient-encounter role playing strategies within a virtual medical clinic set up in Second Life. Each student takes the part of the doctor, nurse, patient, or patient spouse. After the role play, students discuss and reflect on their experience and its application to future patient encounters. (Antonacci and Modaress 2005)
- This initiative tested the use of a text messaging service to support third year students of Italian Language and Literature at Griffith Higher education institutions in Australia to learn new vocabulary. Students were sent new words, definitions, and example context sentences at appropriately spaced intervals in between the scheduled lessons and tutorials of their course. (Levy and Kennedy 2005)
- An undergraduate psychology student uses a wiki to write an essay for her cognitive psychology class (note that the actual author of this experimental activity is a writing mentor at London Metropolitan Higher education institutions in the UK). In addition, the student uses a blog linked to her wiki to share her thoughts on researching and writing her essay. She documents and reflects on each stage of essay writing—from defining research questions and collecting references to reflecting upon the assessment and feedback from an expert. Peers and experts worldwide are invited to comment on her reflections in her blog and contribute to drafts of her essay through the wiki. (Reynolds 2007)



### 3.6 Opening Learning Architectures: From Distribution to Collaboration

The debate about Computer Supported Collaborative learning (CSCL) as a new paradigm underlines that CSCL is indeed a different mode of technology-enhanced learning. It goes back to Timothy Koschmann, who in 1996 published a book with the title: “CSCL—Theory and Practice of a new emerging paradigm.” He argued that the change of the instructional models in the area of information and communication technology can be labeled as a paradigm shift in the sense of Kuhn (1976).<sup>3</sup> He analyzed that with CSCL the focus now lies on the group cognition rather than on the individual development—and that this point of view is incommensurable to the traditional, more individual view, and by that fulfills Kuhn’s conditions for a new paradigm (Kuhn 1976).

The same thought was later taken up by Sfard (1998), who formulated the incompatibility of the two paradigms in two metaphors: the acquisition-metaphor (AM) and the participation-metaphor (PM). The AM views learning as a transfer of knowledge to the individual. The empirical research in this paradigm focuses therefore especially on the change of mental models of individuals. The PM localizes the learning process rather in the intersubjective-, social-, and group processes. Empirical research therefore focuses on participation patterns in the group process. Sfard, however, does not identify a paradigm shift but views both metaphors equally.

In his work “Computer Support for Collaborative Knowledge Building” (2002) Gerry Stahl states that a paradigm shift from a rather individualistic to a more group-oriented cognition has not (yet) taken place. Too strong are the culturally transported individualistic views—in the western cultures—which express already in Descartes “cogito ergo sum.” However, Stahl strongly recommends reinforcing CSCL research with a strong group- and participation-oriented scope. John W. Maxwell from the Higher education institutions of British Columbia published 2002 as well an article in which he doubts the emergence of a new paradigm. He argues that the condition of incommensurability has not (yet) been met and one learning paradigm has not overcome the other one. Maxwell also identifies a change but analyses this from a pragmatic perspective as different types of the same genre who all have the same justification to exist and develop—just like Kerres and de Witt (2004) within their *pragmatic approach* to media didactics.

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<sup>3</sup> The term of a scientific paradigm relates according to Kuhn to a “general explanation pattern or to generally accepted theories, (...) which are steering at the same the future research direction” (translated from Kuhn 1976). According to Kuhn in a normal science everything is concentrated to solve problems in the frame of the existing paradigm which is in turn enlarged and refined. Questions relating to the basis of assumptions were usually not posed and also problem which only occur outside of the paradigm were not seen. Through this effect no new theories and developments were developed within the paradigm. Only through emerging irritation or disturbances which lead to a reduced problem solving capacity of an existing paradigm, new approaches, and paradigms were developed.

In our view it should not be the goal to identify the one and only fitting and suitable paradigm for learning or teaching. We believe that a “one-size-fits-all” approach for technology-enhanced learning and CSCL does not exist, neither for didactical design nor for empirical research. The core question then is, under which conditions individuals can learn successfully with media. The aim has to be to describe the process of creating learning environments in order to reach certain defined objectives and do so—in CSCL—in a collaborative way. Kerres and de Witt (2004) are clearly emphasizing that the search for the one and only correct approach has so far hindered the didactical evolvments in technology-enhanced learning rather than promoted it.

This section gives an overview on the change from a distributive mode of interaction to a collaborative mode of interaction in e-learning. With the huge potential of communication, collaboration, and peer interaction, technology-enhanced learning can more and more live up to the constructivist learning rhetoric which it had been subject to a long time already. What is popular called *Web 2.0*<sup>4</sup> is inducing—when used in technology-enhanced learning scenarios—a change from a distribution mode, where learning materials are send around or made available for download, to a collaboration mode, where learning materials are constructed together in interaction between learners, teachers, and experts. This view challenges the illusion of an *acquisition metaphor* (AM) for learning and suggests a *participation metaphor* (PM) instead. The AM views learning as a transfer of knowledge to the individual. The empirical research in this paradigm focuses therefore especially on the change of mental models of individuals. The PM localizes the learning process rather in the intersubjective-, social-, and group processes. Empirical research therefore focuses on participation patterns in the group process (Sfard 1998). The broadcasting model of information distribution, where media and corporate companies served as providers and users as recipients, is gradually converging into a collaboration model, where corporations and users interact in social networks, and new knowledge emerges from mutual collaboration. If efficiently applied, this potential of Web 2.0 might stimulate in educational institutions the shift from teaching to learning, the shift from transmissive to participative learning models.

Table 3.4 shows the characteristics of technology-enhanced learning scenarios which are used for collaboration and focus on competence development rather than knowledge acquisition. With the (European) Bologna process focusing on competence development, this is clearly the road to go in the field of higher education today (Gonzalez and Wagenaar 2004).

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<sup>4</sup> A number of authors regard web 2.0 not necessarily as a new stage of internet technologies, but rather a paradigm shift in which users make use of the potential of the Internet for mutual interaction and collective creation of knowledge. Web 2.0 stands for a portfolio of emerging tools, which form the basis for a more mature and responsive Internet, in which users collaborate, share information, and create network and scale effects in large communities (Albrecht et al. 2007; Kerres 2006; Musser and O'Reilly 2006; O'Reilly 2005; Seufert 2007).

**Table 3.4** Characteristics of change in technology-enhanced learning models (Ehlers 2007a)

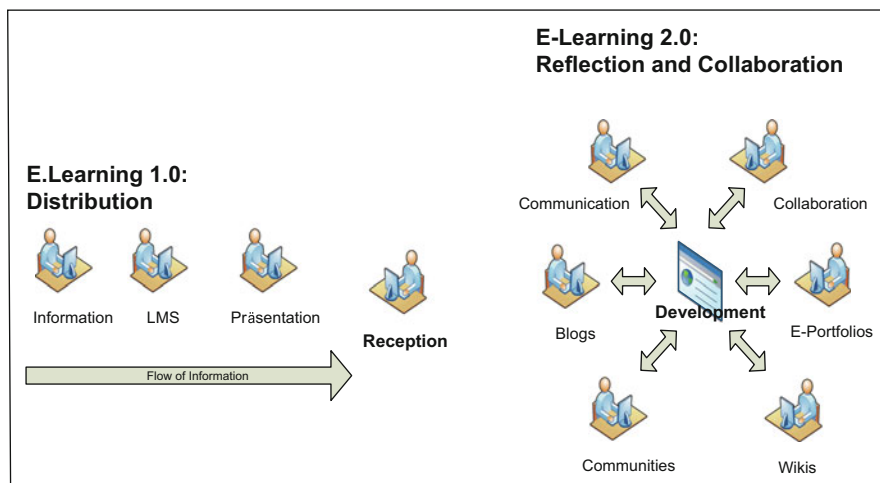
Technology-enhanced learning model characteristics	Distribution model (technology enhanced learning 1.0)	Collaboration model (technology-enhanced learning 2.0)
Knowledge is Paradigm	Stored, processed Reproduction, problem solving, understanding, remembering	Constructed Reflection <sup>a</sup> , to invent new experience, active social practice
Technology use	Presentation, distribution, information	Collaboration, communication
Learning is best described as. . .	Acquisition metaphor	Participation metaphor
Tutor is	Authority	Coach, player
Teacher activity	Teaching, helping, demonstrating	Collaboration, interaction-oriented practical experiences
Interaction type	Transfer model (download)	Communication, exchange (interaction) model
Goal of teaching/learning	Knowledge, qualification	Competence
Assessment type	Knowledge reproduction test, multiple choice	Performance, skill application, evidence-based assessment, e-portfolio

<sup>a</sup>Reflection on learning is a common thread going through most learning perspectives or theories to some degree. Dewey recognized it as far back as 1916, while Cowan (1998) sees reflection as a necessary pedagogical method and Kolb (1984) includes it in his experimental learning cycle (in Mayes 2004)

Competences instead of qualifications, employability<sup>5</sup> instead of *inflexible* job profiles are clearly put in the foreground in future higher education. Technology-enhanced learning in higher education thus faces a challenge: How can it make a difference and support the development of competences? The trend from knowledge transfer to skill and competence development, accompanied by the emphasis on informal learning approaches and the underlying concepts of the 2.0 movement is considered to change learning environments from operating in a distributive mode towards approaches that are increasingly based on collaboration and peer production (Ehlers 2008, see Fig. 3.10).

This means (see Fig. 3.10) that earlier concepts of technology-enhanced learning focused primarily on the distribution, presentation, and availability of information and predominantly pursued a transmissive approach of learning, e-learning 2.0 puts the emphasis on social processes, their linkages, and interdependencies.

<sup>5</sup> Employability is about having the capability to gain initial employment, maintain employment, and obtain new employment if required. In simple terms, employability is about being capable of getting and keeping fulfilling work. More comprehensively, employability is the capability to move self-sufficiently within the labor market to realize potential through sustainable employment. For the individual, employability depends on the knowledge, skills, and attitudes they possess, the way they use those assets and present them to employers, and the context (e.g., personal circumstances and labor market environment) within which they seek work.



**Fig. 3.10** From distribution to collaboration (Ehlers 2008: 8)

In accordance with Siemens (2004a, b), Hagel and Brown (2005: 80, 85, 165) consider this development to be a reaction to the challenges of the complex, interconnected, and barely predictable surroundings of today's world and refer to it a shift from *Push* to *Pull* (see Table 3.5), which animates and enables learners to be as responsive as possible rather than focusing on attempts of foreseeing and vastly planning (Spender and Stewart 2002).

Accordingly it can be subsumed that, while technology-enhanced learning 1.0 focused on the acquisition of precast static content within a given set of conditions, e-learning 2.0 puts the attention on participation, collaboration, and communication between learners involved in the process of creating recordable learning results just-in-time and while developing their own and individually designed environments aligned to the current needs and situation and appreciating and using the Web as a seemingly infinitely capable instrument and resource (Ehlers 2008: 8; Attwell 2007a, b).

The joint collaboration of learning materials and knowledge landscapes—peer production—has grown tremendously in importance since the invention of the Web. According Benkler (2005: 2), argues that it has already created a deep transformation in the digitally networked environment and within the information economy and society. With the extended possibilities of the 2.0 movement, peer production, which is considered as a narrower subset of “commons-based” production, became even more popular, due to the success of examples like the development of Open Source Software such as Linux, Apache Firefox, Gimp, and OpenOffice, as well as the online encyclopedia Wikipedia or endeavors such as Project Gutenberg and Clickworkers. The underlying concept of “Commons-based” production is generally characterized as production that uses inputs from commons over which no one has exclusive rights and releases its outcomes back

**Table 3.5** From push to pull (Cross 2007: 38)

	Push	Pull
Assumption	Assumes one can predict the demand for learning	Assumes the world and thus the demand for learning is unpredictable
Approach	Anticipates	Responds
Available information	Rigid, static	Flexible, dynamic
Focus of information	Conformity, core	Innovation, edge
Granularity of information	Monoliths, components glued together	Small pieces, loosely joined
Form of presentation	Programs	Learnsapes, scenarios, learning worlds

into commons to enrich both its creators and anyone else who follows the same patterns of production. In context of technology-enhanced learning peer production is however referred to as digital content for learning, which is created, edited, enriched by peers, operating on the same hierarchical level. Especially the advent of movements like open educational resources movement and open access in education has boosted this phenomenon enormously. The structural attributes of peer production, such as modularity, independent production, and incremental and asynchronous mode of operation, presents challenges as well as opportunities for the quest of developing quality within technology-enhanced learning 2.0.

**Story: Manolo's Business Trip** Manolo's Business Trip is part of a peer produced, online, multilevel, English language course. It is a project of the IAVANTE English Training Program, which serves 200 students from all over the Andalusian Public Health System in Spain (APHS). This blog-based project was devised as a transversal strategy to adapt learning content to the specific language needs of the professionals who work in public health care as well as to address two additional factors. The first is the growing reliance on "Web 2.0" structures in the workplace of health professionals and therefore attraction to their use for training needs, and the second is to provide a continually stimulating environment in class cycles with no fixed ending points. Manolo is the virtual protagonist of a series of episodes published on an open Wordpress blog using interactive Flash presentations. His character, represented by an avatar, is a flexible mixture between professional and personal (doctor, trainer, researcher, bon vivant, musician, etc.) to facilitate adaptation to and incorporation of all the necessary language scenarios commonly required by a gamut of health professional positions: clinicians, health managers, medical researchers, administrative staff, IT personnel, etc. A team of eight language-training consultants and teachers collaboratively created the initial episodes. These were tested in the classroom environment for didactic effectiveness and also as a means of introducing the concept in context to the students.

The following and current chapters are based on student peer process-created avatar characters forming a community of friends, family, co-workers, and other tangent characters interacting with Manolo. Each APHS student group (in average

eight students per group) creates a single avatar to represent their class in the story. They decide their avatar's profile and relationship to Manolo and provide texts that are spoken by the avatar through recorded voice technology. Each group creates a dialogue between their character and Manolo. Avatar profiles and dialogues are published in a separate category on the blog dedicated to student content. Student content is proofread by student group consensus moderated by the teacher and is posted as is, without additional editing or translation. Episode content is proofread and edited by a teacher peer process and accompanied by a translation.

Groups vote for their favorite avatar from among all the groups, excluding their own. The winning interaction is then prepared by the teaching team as the next episode in the story of Manolo's Business Trip. Additional student polls administered in class and on the blog decide what Manolo will do next. Students define the direction of class content through group consensus twice a year. They are responsible for contributing to class didactic material which is later housed in the Moodle platform. Periodically, students are asked to reassess the class direction and modify it to fit their evolving needs. Manolo's Business Trip episodes are adjusted to reflect these changes. In addition to determining class and blog content, each student creates an individual language goal specific to their personal language learning needs. Classmates receive and provide group support in their efforts to fulfill these goals.

A second feature of Manolo's Business Trip is the inclusion of peer production between the teachers administering the course. Teachers communicate through emails in a "forward to all" group system. Language and grammar content introduced in the narratives and following exercises is created through group consensus based on solicitudes from all teachers. Final validation of material is produced through a peer review followed by administrator approval. Teachers also have their own avatars, which are available for interaction with student created avatars in classroom creative scenarios.

[This case study is taken from the Handbook on Quality Management for Peer-Production and has been authored by Tim McQuaid and David Riley (IAVANTE, Spain)]

### 3.7 From Expert via User to Learner-Generated Content

The "Great Man" approach of history is usually attributed to the Scottish philosopher Thomas Carlyle, who wrote that "the history of the world is but the biography of great men." (Needless to say that it should have been the great *person* approach rather than the great man approach) The TIME Magazine, December 13th, 2006 accounts that he believed that it is the few, the powerful and the famous who shape our collective destiny as a species. It continues:

"That theory took a serious beating this year. [...] But look at 2006 through a different lens and you'll see another story, one that isn't about conflict or great men. It's a story about community and collaboration on a scale never seen before. It's about the cosmic

compendium of knowledge Wikipedia and the million-channel people network YouTube and the online metropolis MySpace. It's about the many wresting power from the few and helping one another for nothing and how that will not only change the world, but also change the way the world changes. The tool that makes this possible is the World Wide Web. [...] And we are so ready for it. And we didn't just watch, we also worked. Like crazy. We made Facebook profiles and Second Life avatars and reviewed books at Amazon and recorded podcasts. We blogged about our candidates losing and wrote songs about getting dumped. We camcordered bombing runs and built open-source software. Who are these people? Seriously, who actually sits down after a long day at work and says, I'm not going to watch *Lost* tonight. I'm going to turn on my computer and make a movie starring my pet iguana? I'm going to mash up 50 Cent's vocals with Queen's instrumentals? I'm going to blog about my state of mind or the state of the nation or the steak-frites at the new bistro down the street? Who has that time and that energy and that passion? The answer is, you do. And for seizing the reins of the global media, for founding and framing the new digital democracy, for working for nothing and beating the pros at their own game, *TIME*'s Person of the Year for 2006 is you" (taken from the *TIME* Magazine, December 13th, 2006).

User-generated content (UGC), also called consumer-generated media or community-curated works, is becoming more and more popular in the field of higher education. It is in fact one of the key innovative elements of the Web 2.0 Revolution. Web content is no longer only produced by traditional "authoritative" sources, teaching and learning are no longer based on prepackaged learning materials, fixed deadlines, and assessment tasks designed and stipulated by teachers, but by the users themselves. The tools, spaces, and skills to contribute and publish their opinions, research, and interpretations online are now manipulated by the users. Although slow on the uptake the user-driven revolution is also reaching universities.

User-generated content poses a number of challenges to the current understanding of education and its institutions, very much due to its success. The concept of "authority" should be rethought. The "ivory tower" of higher education should be opened to the wider world. Knowledge management becomes even more fundamental than in the past. Moreover, the rapidly growing number of learning resources generated by users makes the issue of quality a pressing one. Participative Web services and Internet-based software applications has enabled users to collaborate and contribute to developing, extending, rating, commenting on digital content. This increased participation and interaction of users and the more extensive use of the Internet's capabilities to expand creativity and communication are described by the term "participative Web," as described earlier.

The "explosion" of UGC takes place at such a magnitude and extent which go beyond the boundaries of definition, however, UGC can be defined by some general, common traits that to identify these contents, and the relating processes for the project's aim. The OECD (2007: 18) proposes the following three main characteristics:

"Publication and sharing: The content has be it on a publicly accessible Web site, a collaborative project work, or on a page on a social networking site accessible to a select group of people.

Creative effort: Users must make a certain effort to create or recreate the content and add their own value to it. It's not sufficient to copy and to repost the same content. This creative effort can also be collaborative, i.e., when several users edit the same content. The minimum amount of creative effort hasn't been defined yet and depends on the context.

Creation outside of professional routines and practices: User-generated content is created within a non-professional context without expectation of remuneration or profit. Motivating factors include: connecting with peers, achieving a certain level of fame, notoriety, or prestige, and the desire to express oneself."

Content showing these three main characteristics can easily be classified as user-generated content. But can we still speak of user-generated content if a user is remunerated or becomes professionals after an initial phase of noncommercial activity. Some content might also be created by professionals outside of their commercial activities (e.g., professional video editors creating a film at home). Our definition of user-generated content in the higher education institutions sector refers to learning resources/content/information produced by end users for end users and has the following features:

- The content is—at least theoretically—accessible over the Internet.
- It reflects a "certain amount of creative effort" (no copy–paste).
- It is "created outside of professional routines and practices" (i.e., there is no official request from the university's side like in exams or seminar papers; in this sense, it makes a difference if evaluation is requested by the higher education institutions (no UGC) or organized by the students in a private blog (UGC).

The following examples of UGC media share these main characteristics:

- Discussion boards
- Blogs
- Wikis
- Social networking sites
- News Sites
- Trip planners
- Memories
- Mobile Photos and Videos
- Customer review sites
- Experience or photo sharing sites
- Any other Web site that offers the opportunity for the consumer to share their knowledge and familiarity with a product or experience
- Audio
- Video games
- Maps and location systems



Böttcher (2006) differentiates between three major types of content in online courses:

- “1. Prepackaged authoritative content: Prepackaged authoritative content generally consists of materials collected into a textbook, representing vetted scholarship. Prepackaged content is generally developed with the discipline and content perspective as the primary driver; the specific learner and the learning context is abstract and assumed. Prepackaged content often contributes about 30 to 40 percent of the content of a course and serves to provide content containing the core concepts and principles of the course. This content might also include problems, tests, and quizzes for the core concepts and principles. As for format, the textbook is slowly shifting from a physical book and a CD, to a Web site and digital book. The textbooks of the future may well be digital and portable. Recent product announcements illustrate two possible formats. One format by Findaway (<http://www.findaway.org>) combines an audiobook with its own portable player; another new format by Sony (<http://www.sony.com>) provides a larger text-display screen that is close to the size of a paperback book.
2. Guided learning materials: Guided learning materials are produced specifically for a course by a faculty member. They include the content written by faculty prior to and during a course, such as the syllabus, projects, assignments, discussion reviews, and feedback to questions. The content generated by the faculty includes the lecture content. In online learning, much of this content is developed ahead of time, and used for two to three cycles of a course. As this content is continually being massaged to fit particular sets of students, it is dynamic and customized. It is created ahead of time, but not by much. This guided learning material accounts for about 30 percent of a course, as well.
3. Interactive and spontaneous “performance” content: The third type of content is created and identified by students in the process of learning. Interactive and spontaneous content is “what happens during learning”—or “performance” content. It is the content generated in discussion-board postings and analyses, reflections, summaries, and reviews. It is content created by individuals and teams for projects and other assignments, including test preparation. It is the content generated in the solving of problems; it is the drafts of problems, and even the wrong alleys of learning. This course content might be “found” content, including that of current news events, etc. that students bring to the course experience. The purpose of most of this spontaneous performance content is to stimulate and generate the lasting, more-permanent knowledge growth within the individual students.”

However, these categories can be extended by two further categories: Professional content and Students Professional Content (see Table 3.6).

The following fictional scenarios show how content can be user generated in higher education.

### **Scenario 1: Professional Content**

Thomas U., public assistant professor at the European University, publishes his scientific article “Academic staff views of quality systems for teaching and learning: a UGC case study” in a peer-reviewed—not open access—journal.

**Table 3.6** Categories of content in courses (Lee and McLoughlin 2007)

Content category	Description
Professional content	Content created by Professional for Professionals, e.g., Journal articles
Prepackaged authoritative content	Represents vetted scholarship, developed primarily with the discipline and content perspective in mind, as opposed to catering for the individual learner or context. It may include textbooks and other readings, problems, tests, and quizzes assessing core concepts and principles, presented in either hard copy (printed) or electronic (CD-ROM, Web site, audio book) format
Student professional content	Material produced by students upon an official request from the university's side like in exams or seminar papers; evaluated by professors
Guided learning materials	Materials produced specifically for a course and/or cohort of students by a faculty member prior to and during a course and may include things such as the syllabus, projects, assignments, discussion reviews, assignment feedback/post-mortems, and responses to students' questions
Student performance content	Content that is dynamically and spontaneously generated by students in the process of learning, including completed project/assignment work or deliverables (i.e., end products) as well as evidence of the process of learning, such as successive drafts of solutions, descriptions of mistakes made, or difficulties encountered. This category may also include: <ul style="list-style-type: none"> <li>– Synchronous and asynchronous computer-mediated communication (CMC) discourse (e.g., chat logs, discussion board postings)</li> <li>– Reflective writing in the form of learning journals/diaries, summaries, and reviews created by students working individually or in teams</li> <li>– "Found" content, including the results of students' own wide reading of Web sites, journals, magazines, and news articles that they bring to and share with one another in the learning environment</li> </ul>

As in this scenario professionals create content for professionals, therefore the content can be classified as Professional Content.

### Scenario 2: Prepackaged Authoritative Content

In a literature class on Mediterranean fiction novels led by Anne Schmidt, the lecturer uploaded a sequence of content for the next 4 weeks phase in her course to the learning environment. All students in the class were required to download and read, as well as answer the questions in the given and suggested format prior to attending face-to-face class discussions.

In this scenario, a professional has created prepackaged authoritative content for her students. This sharable content doesn't demand any creative effort from the students; also it is created inside the professional routines and practices and cannot be sorted as user-generated content.

**Scenario 3: Student Professional Content**

Students studying German and Spanish courses in distance education mode are supposed to upload their essays to a repository accessible for the supervisor and assistant supervisor for review and grading.

In this Scenario, the student-created content has officially been requested from the higher education institutions and will be evaluated by the professors; it can be classified as Student Professional Content. It involves some weak notion of user-generated content, but is very guided in a closed and strict environment.

**Scenario 4: Guided Learning Material**

This scenario covers all content which has been created by professional teachers as learning materials for their learners. It involves work by a professional but is often created “ad hoc” and does not constitute peer-reviewed or “finalized” materials.

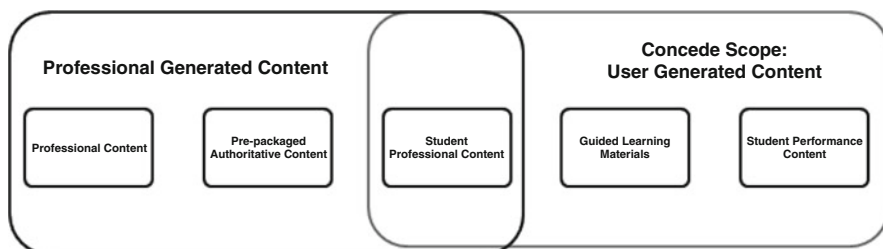
The scenario can be subdivided into two cases:

- (a) For his course in General Psychology, Dr. Miller has published the syllabus, discussion reviews, and responses to frequently asked questions on the learning platform. In this case content has been produced by a professional prior to the course beginning. Although the content is available online, it's not supposed to be “prosumed” by the students nor has it been created outside from professional routine: It's Guided Learning Material.
- (b) For his course on Enterprise Resource Planning (ERP), the associate professor Mathias L. Caine prepares a link list and an idea scratch about the SCM topics discussed in the last session on the way to his seminar as basis for further reading and discussion.

In this case the materials are especially created for the course by a professional but much more loosely structured. They also constitute Guided Learning Material, but differently connoted.

**Scenario 5: Student Performance Content**

At the law faculty Professors Paul A. Meyers' courses make use of a wiki maintained by students, with the goal to create encyclopedia entries on a variety of subjects related to law, criminal justice, sociology, and criminology. In the *Online Wiki of Criminal Justice* learner-generated content can be readily shared in virtual “public spaces” and to a broader audience.



**Fig. 3.11** Content categories (Ehlers and Helmstedt 2010)

The wiki's ease of use enables students to create a huge variety of content within a short timeframe. In addition to generating and entering initial content, students also perform the roles of editing, revising, and organizing the content, which becomes part of the shared pools of resources accessible to all learners. Although all site content was initially written by students from Professor Paul A. Meyers' course, the site is now available for educators to use for class assignments and other students outside the institution are allowed to register and contribute.

In this Scenario, the content generated by the users is Student performance content, produced from students for students; therefore it can easily be classified as user-generated content (see Fig. 3.11).

### 3.8 Open Educational Resources and Open Educational Practices

The term Open Educational Resources (OER) was first used by UNESCO at its "Forum on the Impact of Open Courseware for Higher Education in Developing Countries" in 2002. Alternative labels include "open courseware," "open-learning resources," and "open-teaching/learning resources" (UNESCO 2002: 24). Commissioned by the Hewlett foundation, Atkins et al. (2007) the report provides a comprehensive review of the development of the OER movement, describing many of the major initiatives in the field and some of the key achievements. A complementary report emerged at around the same time, commissioned by OECD (2007). Both reports give a good overview of the field, the motivations and aspirations behind the OER movement, as well as a reflection on some of the challenges associated with this area. Seely-Brown (2008), through an edited collection, consider the wider notion of "openness" and what it might mean in an educational context.

### 3.8.1 *Open Educational Resources*

This section provides a brief introduction to the concept of Open Educational Resources (OER). This includes a brief description of the emergence of the OER movement, a definition of the term and an overview of the OER landscape (including key initiatives and stakeholders). This concept is returned to in more detail at relevant points in the document.

Before describing the emergence of the OER movement it is worth briefly positioning the term “OER.” Conole and McAndrew (2010) provide the following definitions:

- A learning object can range from a simple digital asset (such as a piece of text or an audio file) through to a more complex learning resource incorporating a range of media and designed to support a particular learning activity.
- Open Educational Resources (OER) are teaching and learning materials made freely available for use and repurposing by teachers and learners. The term is potentially synergistic with learning objects; the emphasis is on the open license allowing the use and reuse of the resources.
- A learning activity consists of a set of tasks a learner undertakes, either individually or in a group, using a specific set of resources (which may include tools) to achieve a set of intended learning outcomes.
- Learning design is a research area developing methods, tools, and resources to support teachers in making pedagogically informed better use of technologies.

The OER movement reflects the growing interest in recent years in making educational content freely available. Terms such as “open content” and “open educational resources” have gained currency; and there is now a well-established international community of those interested in producing, using, and researching OER. Conole and McAndrew (2010) provide a summary of the emergence of the field, highlighting the key movements and reports, which is summarized here. The Hewlett Foundation defines OER<sup>6</sup> as

“Teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use or re-purposing by others,”

while the OECD define them as

“Digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research” (OECD 2007:133).

The scale of effort and investment in the development of OER is impressive, as the following statement on the OpenCourseWare Web site<sup>7</sup> indicates:

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<sup>6</sup> Definition on the Hewlett website, <http://www.hewlett.org/Programs/Education/OER/>

<sup>7</sup> <http://www.ocwconsortium.org/about-us/about-us.html>

“OpenCourseWare Consortium is a collaboration of more than 200 higher education institutions and associated organizations from around the world creating a broad and deep body of open educational content using a shared mode.”

In 2002 the Hewlett Foundation initiated an extensive OER program, the chief aim was to “catalyze universal access to and use of high-quality academic content on a global scale” (Atkins et al. 2007:1). More recently, in the UK, the Higher Education Academy (HEA) and the Joint Information Systems Committee (JISC) have initiated a large-scale call on the development of OER,<sup>8</sup> building on existing initiatives such as JORUM and OpenLearn. According to the OECD (2007) over 300 higher education institutions worldwide are engaged in the development of OER with more than 3,000 open access courses. There are numerous initiatives and consortia involved in this area, examples include the following:

- OpenCourseWare consortium (<http://www.ocwconsortium.org/>)
- China Open Resources for Education (CORE) consortium ([http://www.core.org.cn/cn/jpkc/index\\_en.html](http://www.core.org.cn/cn/jpkc/index_en.html))
- Japanese OCW Consortium. (<http://www.jocw.jp/>)
- ParisTech OCW project. (<http://graduateschool.paristech.org/>)
- Irish IREL-Open initiative (<http://www.irel-open.ie/>) and
- JORUM repository (<http://www.jorum.ac.uk/>)

The Cape Town Open Education Declaration<sup>9</sup> argues that the OER movement is based on “the belief that everyone should have the freedom to use, customize, improve, and redistribute educational resources without constraint”. It focuses on three suggested strategies to removing current barriers to the use of OER

- Teacher and learner engagement with OER
- A general policy to publish openly
- Commitment to open approaches at institutional and government levels

The OER movement has been successful in promoting the idea that knowledge is a public good, expanding the aspirations of organizations and individuals to publish OER. However as yet the potential of OER to transform practice has not been realized. There is a need for innovative forms of support for the creation and evaluation of OER, as well as an evolving empirical evidence base about the effectiveness of OER. However, recognition of the importance of investment and effort into promotion of the use and uptake of OER is evident in the prominence given to OER developments in a recent major report on Cyberlearning, commissioned by the National Science Foundation (2008). One of the five higher

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<sup>8</sup> See [http://www.jisc.ac.uk/fundingopportunities/funding\\_calls/2008/12/grant1408.aspx](http://www.jisc.ac.uk/fundingopportunities/funding_calls/2008/12/grant1408.aspx) for details of the call and associated documentation

<sup>9</sup> <http://www.capetowndeclaration.org/>

level recommendations in the conclusion to the report is to “adopt programs and policies to promote Open Educational Resources.”

Researching Open Educational Resources raises issues in how to address global connections and the reuse, design, and evaluation of worldwide efforts to work with learning resources that are available for free use and alteration.

“OER is not only a fascinating technological development and potentially a major educational tool. It accelerates the blurring of formal and informal learning, and of educational and broader cultural activities. It raises basic philosophical issues to do with the nature of ownership, with the validation of knowledge and with concepts such as altruism and collective goods. It reaches into issues of property and its distribution across the globe. It offers the prospect of a radically new approach to the sharing of knowledge, at a time when effective use of knowledge is seen more and more as the key to economic success, for both individuals and nations. How paradoxical this may turn out to be, and the form it will eventually take are entirely unforeseeable. The report offers some preliminary handles for understanding the issues raised.” (OECD 2007:9)

Open provision of course materials has become a more extended movement with many higher education institutions adopting the approach. However the diverse OER projects have not received much research attention to establish how best to move from existing provision to better structures for open operation. UNESCO (2002) identified four elements that have to be considered when talking about Open Educational Resources:

- The vision for the service—open access to the resource, with provision for adaptation
- The method of provision—enabled by information/communication technologies
- The target group—a diverse community of users
- The purpose—to provide an educational, non-commercial resource (UNESCO 2002: 24)

The main properties of OER are: free access “enabled by information and communication technologies” and a “noncommercial purpose” (UNESCO 2002: 24). OER is intended to make “high-quality educational material freely available worldwide in many languages” (Keller and Mossink 2008).

McAndrew et al. (2009) argue that despite some terminological differences (Hylén 2006), open educational resources are largely digital assets (music, images, words, animations) put together into a logical structure by a course developer who has attached an open license to it. In other words, the content is openly available (it can readily be found or discovered), is openly accessible (it is in a form which others can take it away) and openly reusable (the user can easily modify it and is allowed under the license to do certain things with it without having to ask the creator’s permission first).

## Examples of OER Initiatives

### OpenLearn Initiative—Open Higher education institutions UK

<http://www.open.ac.uk/openlearn/home.php>

The Open Higher education institutions (OU) are the UK's only higher education institutions dedicated to distance learning. Since its founding in 1969, the Open Higher education institutions have been a pioneer in making learning materials freely available through its successful partnership with the BBC. Many OU courses are already supported by free Internet activities and print materials. OpenLearn is the Open University's Open Content Initiative. OpenLearn started in 2005 with a grant from The William and Flora Hewlett Foundation. The OpenLearn Web site was launched in October 2006. To date, OpenLearn has had 11,284,815 visits from 9,013,911 unique visitors. It offers a range of subject areas from access courses to postgraduate-level course. It has over 5,400 learning hours of content available online, ranging from 3 to 15 h of content for an OER. For a much more detailed discussion of the OpenLearn initiative see Appendix C "The OpenLearn Initiative."

### OTTER

<http://www2.le.ac.uk/departments/beyond-distance-research-alliance/projects/otter>

Otter is based at the Higher education institutions of Leicester and is one of the JISC/HEA-funded OER projects within the institutional strand

### Open Universiteit Nederland—OpenER project

<http://www.opener.ou.nl>

The OpenER project of the Open Higher education institutions of the Netherlands tests the use of OER as a means of increasing participation in higher education. OpenER offers courses derived from existing distance learning courses and suitable for independent study and aims at letting learners to get acquainted with higher education and helps them to gain experiences that boost their self-confidence and motivation to cross the threshold to formal higher education.

### Podcampus

<http://www.podcampus.de>

Podcampus is a podcasting platform for scientific and research contributions. Lectures and courses of interest are recorded and published as audio and video files. Some items have been produced exclusively for Podcampus. Producers are research institutions, academies and educational institutions from all over Germany, Austria, and Switzerland.

### ParisTech, France

<http://www.paristech.fr/en>

ParisTech is a collective entity that includes twelve of the most prestigious French institutes of education and research. It started in November 2003 and aims to make available some of their educational resources (lecture notes, exercises, yearly archives, simulations, animations, course notes, and videos).

(continued)



One target of this project is to promote the excellent high quality teaching provided by those institutions in order to attract foreign students. Another goal of the project is to contribute to bridge the digital divide by making available Open Access Educational Resources, in accordance with the recommendations of the World Summit on the Information Society (WSIS). This initiative appears in the WSIS stocktaking database. This project is based on three principles:

**Commonwealth of Learning (COL)**

<http://www.col.org/Pages/default.aspx>

The Commonwealth of Learning (COL), based in Vancouver, Canada, is an intergovernmental organization created by Commonwealth Heads of Government to encourage the development and sharing of open learning/distance education knowledge, resources, and technologies. COL is helping developing nations improve access to quality education and training. Two online databases of learning content that provides support to Commonwealth countries free of charge. Institutions or governments can use these repositories to access a range of free learning content.

### **3.8.2 *Creative Commons***

To freely share materials in higher education poses a challenge—because of the question of copyright. Who can the material be attributed to? And will the original author still be credited for his or her work—if the work is put to open sharing? In higher education Creative Commons is helping to instigate cultural change: it is empowering rights holders with the knowledge and tools to decide under what terms they wish third parties to use their creations, while permitting users easy and user-friendly means to use content lawfully without the necessity of requesting permission. The release of the Creative Commons licenses has inspired a global revolution, supported by a subculture with its own identity, ideology, activities, and membership and the spawning of other model licenses developed with a similar philosophy, such as Science Commons, Patent Commons, and Creative Archive. However, despite the remarkable widespread use of these licenses, there are critics of Creative Commons licenses who raise concerns about the ethics, legality, and politics of their use.

The Creative Commons philosophy is driven by those who believe in free and open exchange of digital content and to create a middle way between “...the extremes of copyright-control, and the uncontrolled exploitation, of intellectual property.” The license was inspired by the open source movement and follows the principles enshrined within copy left which encourage the free distribution of works and any derivatives made of it. The use of Creative Commons licenses therefore has the potential to redress the copyright equilibrium disrupted by recent developments. Recent test cases in Dutch and Spanish courts have upheld the validity of Creative Commons licenses in infringement of copyright cases.

### Useful Webresources

Creative Commons Web site <http://creativecommons.org/>  
iCommons Web site <http://www.creativecommons.com/>  
Science Commons Web site <http://sciencecommons.org/>  
Patent Commons Web site <http://www.patentcommons.org/>  
Creative Archive Web site <http://creativearchive.bbc.co.uk/>

Creative Commons offers the creators of digital content a range of digital licenses attached to their content that permit different access rights to it. These licenses are available in various forms that permit the rights holder to retain a level of control over how their work is treated (“Some Rights Reserved”). Availability in different formats, comprising machine-readable code for search engines and other applications to identify the work by its terms of use, a detailed license, and a summary of the license using symbols to represent key license terms offer enormous benefits. The dramatic uptake and continual publicity surrounding Creative Commons licenses means that individuals are likely to encounter content on the Internet which is governed by the terms and conditions of Creative Commons licenses.

### Use of Creative Commons in Higher and Further Education

Certainly, the take-up of these licenses within Higher and Further Education institutions is believed to have been significant and, in many cases, possibly unquestioned because of the alignment of the Creative Commons philosophy and the broad sign-up to the benefits of open access. Examples of the use of Creative Commons licenses include the Open University’s OpenLearn initiative. Indeed, the full extent and implications of the use of Creative Commons licenses within higher education and further education contexts within the UK will shortly be assessed as part of commissioned research by the JISC. But, in a climate where we really need to know what we are signing up to, should we not be looking beyond the ideology of these licenses and checking whether they are really fit for our purposes?

### 3.8.3 *Open Educational Practices*

In general, open educational practice is defined as the use of open educational resources in such a way that the quality of educational experiences is raised (Ehlers 2010). Whereas OER focus on content and resources, OEP represents the practice in which an educational method is employed to create an educational environment in which OER are used or created as learning resources.

Where OER focuses largely on the questions of how resources can be made available, OEP asks the question of how OER can be used in the educational context. In a sense, OEP means to put OER to the test by creating educational activities, feedback, and interaction around a piece of open-learning material. Whereas OER is sometimes a collection of often itemized resources (pictures, texts, Web sites, videos), OEPs focus on educational practice and thus represent a sequence of activities, in which (open) resources are used with a specific intention. OEP focuses more on the demand side of education and not so much on the supply side. Questions of educational processes are focused on where information and communication technologies (ICTs) are used to create, modify, and reuse resources. This should be carried out in a manner that allows the quality of learning experiences to be raised.

The term “practice” signifies that a holistic context is addressed, not only one element of it, be it the resource, the learners or teachers, or the educational or organizational context. A certain educational context is associated with OEP. It is an educational context in which OER are used in a context of reflective educational concepts, in which learners’ peers and teachers validate the learning processes and results through critical dialogue. OEP can be applied to formal as well as informal (and nonformal) educational scenarios.

Teachers are assuming their role as guides rather than as content bearers. They help students to validate learning experiences rather than transferring knowledge to them. Validation in itself becomes a more and more reflective practice thus moving away from oral or written tests which are asking for reproduction of a predefined set of knowledge assets. Some examples to differentiate open educational *resources* from open educational *practices* are given below.

- A database or repository of open educational resources is not open educational practice. The sole usage of open educational resources in a traditional closed and top-down, instructive, and final exam-focused learning environment is not open educational practice. However, if OER are used to create resources which are more learner centered than the ones existing before, and if learners are involved into the creation of content which is taken seriously by the teachers/facilitators, if teachers are moving away from a content-centered teaching to “human resource-”based teaching, if learning processes are seen as productive processes and learning outcomes are seen as artifacts which are worth sharing and debating, improving and reusing, then OER might improve the learning process and then we can related to open educational practices. Open educational practices are educational scenarios in which learning is practices as social practice in reflective interactions between the stakeholders.
- Open Educational practices are having a “lifecycle” which is influenced by the entire open educational practice governance community,
  - Be it the national policy makers who are promoting the use of open educational resources
  - The rector of a higher education institution who is initiating an institution wide open education initiatives in which teachers are asked to create, find,

adapt, and share OER in an institution wide OER repository, and in which educational strategies and models are collected and shared among teachers

- The teachers who are encouraging learners to produce, share, and validate content
- Or the learners who are using open available content to create knowledge landscapes on study topics which better fit their needs than the available text book “one-size-fits-all” style

Therefore the following is put forward as a general definition: “Open Educational Practices (OEP) are the use of open educational resources with the aim to improve quality of educational processes and innovate educational environments.” Ehlers (2010) provides further dimension for open educational practices.

- OEP are defined as *practices* which support the (re)use and production of high quality OER through institutional policies, promote innovative pedagogical models, and respect and empower learners as coproducers on their lifelong learning path. OEP address the whole governance community, policy makers, managers, administrators of organizations, educational professionals, and learners
- There is little consideration of how OER are supporting educational practices, and promote quality and innovation in teaching and learning
- Open Educational Practices are defined as the use of open educational resources in such a way that the quality of educational experience is raised. Whereas OER are focusing on content and resources, OEP represents the practice in which an educational method is employed to create an educational environment in which OER are used or created as learning resources

OEP means the use of OER and the opportunity to benefit from experiences and expertise of others. It is inherently based on collaboration between content creators and users because it involves the reuse of resources which have been created by other persons (often peers). Collaboration is further explicit when OER are modified and then republished as OER, so that the original creator can take advantage of the amended—often validated—resource.

OEP also opens the door to the incorporation of social learning in the learning environment. The social learning element is coming in because learners can use educational resources, modify them, and present them to other learners (modification of OER or user-generated content), knowledge environments on the basis of OER can be created by learners and shared with other learners or teachers (e.g., social bookmarking, Wikis, collection of resources) and social interaction is changing focus from the transfer of knowledge to social practices which involve reflection and peer reflection of one’s own experiences, creating content together and validation through peer interaction between learners, and between learners and teachers or experts. OEP already considers the localization of resources since it is educational practice. A core element of practice is that it does not separate the resource from its usage but takes into account the interplay between stakeholders, organizational elements, and resources. OEP entails the use and creation of educational resources which are openly available. It thus multiplies openly and freely

available resources. It also allows learners to become professional in using open resources and validating their usefulness for their own learning and development processes. Thirdly, it opens educational scenarios to focus more on applying knowledge and working with knowledge rather than on transferring knowledge.

A collection of stories could be a possible way to capture the quality of the educational practice which has been developed and implemented based on an OER. This selection of stories, or case descriptions could be collected under a certain structure, enabling learners and teachers to learn from it and to benchmark and bench-act. OEP might be a bridge between formal and informal learning experiences since it involves creating learning resources in one environment (e.g., formal) which can be used additionally in another (e.g., informal) environment in addition—or vice versa. OEP opens the vision to create an open source curriculum of learning materials for degree relevant education. It would thus fundamentally change the nature of the way educational organizations operate today. Where educational organizations today are gatekeepers of content and knowledge transfer, they would become professional validation agencies.

OEP involves the whole educational governance community, consisting of policy makers, management, administration, educational professionals, and learners. When elaborating concepts for quality it is necessary to define how the role of each stakeholder in an environment of open educational practices is affected and changed. Under the conditions of OEP everybody can be seen as a learner. Learners, however, change their roles and become producers, and are also active as teachers. Learners are also peers who enter into peer review and mutual assessment validation processes. The creation, use, and reuse of open educational resources, as well as the exploitation of open-learning ecologies can be challenging not only for learners and educators but also for leaders of educational institutions. Policy makers, as well, often need to be made aware of and understand both concepts and can play a strategic role in fostering a rapid uptake of OER and enabling a timely adoption of OEP.<sup>10</sup>

### **The Open Educational Quality Initiative (<http://www.oer-quality.org>)**

The Open Educational Quality Initiative (OPAL)<sup>11</sup> started from the premise that it is necessary to raise awareness and foster understanding of how open-learning ecologies, tools, and content can support the use, creation, and reuse of OERs. It is evident that the OER movement has begun to move well beyond an initial focus on mere access to practices. The project aims to provide guidance to learners, educators, leaders of educational institutions, and policy makers on how to strengthen Open Educational Practices (OEP) within their specific contexts.

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<sup>10</sup> In parts the concepts and ideas described in this document are developed as a collaborative exercise of 30 experts in an international workshop at UNESCO in Paris in November 2010.

<sup>11</sup> <http://www.oer-quality.org>

The below-introduced matrix suggests different degrees of openness in the usage and creation of open educational resources. The span ranges from “no usage” or “OER usage” to “OER (re-) usage and creation.” With these three stages, the scale covers different realities within organizations and/or individual learning behavior. This dimension of openness in resource usage and creation is set in relation to a dimension of pedagogical practice. The dimension of pedagogical practice is subdivided into three degrees of openness which represent different stages of openness in teaching and learning frameworks. While there is currently no agreement classification of “openness” of pedagogical models available, research suggest different aspects of openness of freedom in teaching and learning frameworks (see Fig. 3.12).

The approach which we adopted to classify pedagogical models/learning activities regarding their openness follows largely Baumgartner’s (2007) approach: teacher—tutor—coach. However, other alternative approaches to classifying learning activities have been taken into account which come to similar conclusions, like *Paavola*, *Lipponen*, and *Hakkarainen* (2004) who suggest learning metaphors along acquisition—participation—knowledge creation, *Laurillard* (1993) or a comprehensive analysis of *Mayes* and *de Freitas* (2004) for JISC. Following this analysis, pedagogical levels of “freedom” or “openness” have been conceptualized:

- “Low” if objectives as well as methods of learning and/or teaching are rooted in “closed” one way, transmissive and reproductive approaches to teaching and learning. In these contexts, the underlying belief is that teachers know what learners have to learn and mainly focus on knowledge transfer.
- “Medium” represents a stage in which objectives are still predetermined and given, but methods of teaching and learning are represented as open pedagogical models. They encourage dialogue-oriented forms of learning or problem-based learning (PBL) focusing on dealing with developing “Know how.”
- “High” degrees of freedom and openness in pedagogical models are represented, if objectives of learning as well as methods (e.g., learning pathways) are highly determined and governed by learners. Questions or problems around which learning is ensuing are determined by learners (SRL—self regulated learners), and teachers facilitate through open and experience-oriented methods which accommodate different learning pathways, either through scaffolding and tutorial interactions (ZPD Vygotskian inspired approaches) or contingency tutoring (*Woods & Woods* strategies of re-enforcement, domain, or temporal contingency).

OEP are defined as practices within the trajectory, which is delimited by both dimensions: openness in resource usage and creation vs. openness in pedagogical models. Both dimensions can help individuals and organizations to self-assess and position their respective context. Using the matrix we can analyze three examples (see Fig. 3.12):

		OER Usage		
		Low No OER (re-) usage	Medium OER (re-)usage or creation	High OER (re-)usage and creation
Learning Architecture	High Social practices, Collaboration, Sharing (Reflection in action), • „open“ objectives • „open“ methods	A	B	C
	Medium Dialog, Procedures, Rules (Know-how) • „closed“ objectives • „open“ methods	D	E	F
	Low Knowledge transmission (Know that) • „closed“ objectives • „closed“ methods	G	H	I

Fig. 3.12 Open educational practice matrix

1. Autonomous Learning without OER: A high degree of pedagogical openness (project based learning, etc.) and a low degree of OER usages and creation would result in interactive, autonomous learning contexts *without* extensive use open educational resources.
2. Lectures with OER: using OER (e.g., a slide set) to give a lecture to students in a directive, knowledge transfer.
3. Open-Learning Architectures: Whereas a high degree in openness in pedagogical models in combination with a high degree in OER usages and creation result in a high degree of OEP in which OERs are used in open-learning architectures (e.g., creation of Learner-Generated Content in exploratory, autonomous learning scenarios).

OEP essentially represent a collaborative practice in which resources are shared by making them openly available, and pedagogical practices are employed which rely on social interaction, knowledge creation, peer-learning, and shared-learning practices. Once an individual or an organization has understood the constitutive elements and principles of OEP which were addressed in the first matrix, they can move on and analyze the diffusion of OEPs within their specific context using the second matrix, presented below. We believe that educational practices are never entirely closed or open and that within educational organizations patterns and configurations of educational practices exist which taken together constitute a diverse landscape. This has to do with the diverse beliefs and attitudes towards OER and towards open pedagogies. In order to be able to categorize, assess, and position the existing landscape of OEP within a given context (e.g., a learner or a teacher in his/her context) they can be mapped against two dimensions: the freedom of an *individual* to practice open education on the one hand and the involvement of others in OEP, which is expressed in different degrees of shared practices and collaboration. Both dimensions delimit the trajectory of diffusion of OEP for any given context. The below shows the different dimensions in combination (see Fig. 3.13).

		Degree of involvement of others into the OEP		
		Low Low degree of sharing/ collaboration	Medium Medium degree of sharing/collaboration	High High degree of sharing/collaboration
Individual Freedom to practice open education	High Advanced degree of OEP embedded into learning/teaching	A	B	C
	Medium Some islands of OEP	D	E	F
	Low Little or no OEP	G	H	I

**Fig. 3.13** Matrix 2—diffusion of OEP

The dimension, constituting the *individual freedom to practice open education*, is divided into the three stages

- “Low”—means that within a given learning/teaching context no open educational practices are encouraged.
- “Medium”—means that within a given learning/teaching context, islands of open educational practices exist, but are not a shared and common reality.
- “High”—means that within a given learning/teaching context, open educational practices are embedded into the reality of all learning and teaching activities.

The second dimension of the matrix deals with the question how the OEP is socially embedded, and whether others are involved in OEP as well. It ranges from a low degree of sharing and collaboration to a high degree of sharing and collaboration within a given learning/teaching context. Both dimensions delimit the trajectory of OEP diffusion. OEP can be encouraged as an individual activity within a given learning/teaching context but with only little or medium involvement of others to do the same. In contexts, however, in which OEP are embedded into the reality of all learning/teaching activities and at the same time are shared amongst a larger group, then OEP diffusion is high.

The matrix shows that the trajectory of OEP diffusion is actually limited. It is unlikely that there is a combination of “little or no open educational practices” with “high degree of sharing/collaboration,” also an “advanced degree of OEP embedded into learning/teaching” in combination with “low degree of sharing/collaboration.”

### 3.9 Massive Open Online Courses

Online learning ever since its existence has followed certain waves of new innovative developments. Sometimes these were more on the tech side (e.g., when LMS started, rapid authoring tools, social Web, and social media), some more on the



learning design side (bringing new life into old concepts like learner-centered learning) or challenging the existing balances of power and business models through new movements of openness (like OER and open education). A new and very interesting wave is currently running through the scene of learning activists, spreading more and more into reality of reputed higher education institutions, the phenomenon of massive open online courses, in short MOOCs.

When I started out to write this book the term massive Open online courses, or MOOC, as it is abbreviated has not been very popular. We had the first news from some pioneer participants who had tried one, but most of them vary in the very experiment stage and it was rather the fascination of the new than the proof of concept which drove some early adopters to give it a try. This situation has changed dramatically. MOOCs have become almost standard offerings and are regularly pulling together thousands of learners in a stream of interaction and learning. All this is self-organized learning at its best because the courses are designed around pedagogical models in which teacher interaction is nonexistent any more, content is sequenced online, and interaction between learners is key. MOOCs provide a perfect ground for that because with thousands of learners you have a perfect environment for interaction in forums, wikis, and discussion boards. Somebody will for sure eventually react to your post and often this happens rather quickly. Daphne Koller from the MOOC Platform Coursera promotes that in fact MOOCs are designed to enable one-to-one peer tutoring in a very effective way because feedback is given often in an instant with such a big crowd being potential peers.

From a pedagogical point of view, MOOCing—learning in MOOCs—is basically self-organized learning, the most interesting form of education. Will it be possible for the MOOC movement to substantially push forward the vision of self-organized, autonomous life-long learning who are jumping into a stream of learning opportunities with massive crowds and navigate towards their bright future with enriched skill sets and all urgently needed competences for the knowledge society? Or is it just a new form of massification of higher education? Can we utilize the promises of social learning and community based learning with MOOCs?

MOOCs are absolutely fascinating. The most known and reputed universities are giving away knowledge for free, but unlike the claim of the OECD in 2007 when they coined this phrase to describe the OER revolution, today universities offer whole courses, not just their knowledge. Like with all previous waves running through the e-learning scene, many promises of innovative, new learning methods, and the realization of learning design supporting autonomy are coming along with the MOOC development as well. The promise of openness and knowledge for all for free is here combined with the vision of innovative learning which leads to a powerful mix of future promises.

Much progress has been made, indeed. Old style thinking of large parts of higher education management is starting to wonder how our traditional higher educational institutions can be turned into leading promoters of lifelong learning knowledge societies. And if MOOCing can be an alternative to achieve this desired goal. And already we can draw the conclusion that one thing is for sure: MOOC development has managed to gather critical mass to be challenging enough to traditional

institutions that it serves as disruptive and innovation stimulating phenomenon. And that is a lot! When it comes to quality and assessment, the MOOC (r)evolution of learning organization is of course putting everything head to toe. MOOCs provide maximized opportunities for self-organized learning. That means that the quality of learning and learning experiences depends very much on the ability of an individual learner to use the environment for his or her own purposes, analyze what s/he needs to learn, apply learning pathways which work for them, and assess their outcomes on a self-evaluation and self-assessment base. All methods for self-assessment and self-evaluation described in this book at a later stage are useful for quality development of learning in MOOCs, as they all emphasize on the individual learning experience rather than external standard setting.

The ultimate assumption of this book is that in times of Web 2.0, learning environments change in so far that the individual learner gains power over their own learning path and pace. This also brings them into a position of responsibility for their own quality development and assessment of (or rather for—read about this distinction later on) learning. MOOCs are therefore amplifying what the learning 2.0 movement and social Web for learning have brought up.

“Quality” in a MOOC is defined not as the exceptional nature of published materials, but rather the richness and utility of conversation and discussions mediated by those artifacts and other activities. Hence, quality is determined post-publication, and even post-distribution, as an emergent property, and not an inherent property of the resource itself. However, there are some myths, which need to be uncovered and which are blurring the current picture of MOOC style learning:

### ***3.9.1 Myth 1: MOCs Follow Their Own Quality Logic***

Unlike many claims, quality methodologies and approaches do not need to be reinvented for MOOCs. MOOCs are large online courses and as such the quality logic applied to e-learning processes also applies to MOOCs. While on first sight it seems that everything is put head to toe with MOOCs, MOOCs are by nature nothing else than large and largely self-organized learning opportunities. That means that the quality of learning and learning experiences depends very much on the ability of an individual learner to use the environment for his or her own purposes, analyze what s/he needs to learn, apply learning pathways which work for them, and assess their outcomes on a self-evaluation and self-assessment basis. All methods for self-assessment and self-evaluation are useful for quality development of learning in MOOCs, as they all emphasize on the individual learning experience rather than external standard setting.

What is needed is a broad attempt to analyze the real quality of MOOC learning materials and their learning design approaches. Often what we will find are old style lecture videos combined with not moderated discussion flora—is this a high quality learning experience?

### ***3.9.2 Myth 2: MOOCs Are the Solution for a Better Educated World for All for Free, Especially the Developing and Emerging Countries***

The pure existence of books through Google is not leading to a better-educated world. While provision of learning materials is one side of the coin, tutoring is another and certification a third one, and with MOOCs especially the first is addressed, but not the two latter ones. Tony Bates suggests that it is even dangerous to suggest that Coursera is an alternative to conventional university education because it might take away the pressure off governments in developing and emerging countries to find their own, indigenous solutions to access to higher education. Of course it would be different if Stanford and MIT would give credit for MOOC-based courses and then even awarded full degrees.

### ***3.9.3 Myth 3: MOOCs Use Innovative Learning Design***

With many MOOCs now going into the third and fourth iteration of their existence, more and more pedagogical analysis of the actual learning design is available, with astonishing results: Most MOOCs are simply a repository of—somewhat meaningful—sequenced learning materials and do not bother to go beyond the stage of providing old style teaching videos via YouTube which are representing filmed lectures, often cut into digestible pieces. In a recently presented analysis of some of these videos of 101 courses for artificial intelligence and mathematics, it becomes apparent that the learning design methodology is a purely old style and simplistic presentation and imitation style transmissive concept.

Newer MOOC developments like the e-learning and cultures MOOC which university of Edinburgh recently launched and which in its first iteration drew 42,000 learning into the course are designed more sensible. Learners have to develop artifacts and are required to participate into the review of three artifacts of their peer learners. Such more advanced learning design approaches lead often to more meaningful interaction between students in online environments. Yet, the experimentation phase has just started and developing pedagogies for massive group sizes never has been an easy tasks and should not be sold as Top notch innovation.

### ***3.9.4 Myth 4: Large Data Will Improve Teaching (Taken from Tony Bates Blog 2013)***

Can computer tracking of student activities identify weaknesses in the teaching? The example which Daphne Koller from Coursera gives in her often cited TED Talk was over 2,000 students giving the same wrong answer to a multiple choice

question. In other words, Coursera is using trial and error as a form of teaching: try something, and if it doesn't work, correct it the next time round. However, if they followed good design principles from the outset—for instance working with an instructional designer who could spot such errors or pre-testing material before it goes out to hundreds of thousands of guinea pig students—many of these “errors” in teaching would be avoided in the first place. It is far, far better to avoid errors in teaching than to try to correct them afterwards: unlearning is much harder. With massive numbers of online students, the negative impact is equally massive.

To be clear: I would like to conclude that in my view MOOCs are worth bothering! They give us the benefit of rethinking education, but for sure they are not yet the solution for many of the problems we have in education: Innovation speed and educational opportunities which are restricted to the developed world. But they raised questions and pose challenges which keep the wheel spinning and which provide new shaped visions. And therefore they are for sure worth bothering, trying, and developing further. A whole new wave of research and analysis needs to accompany the currently ongoing trials and future new attempts in order to allow us to learn from these massive learning exercises.

### **3.10 From Teachers to Facilitators, Learning-Stewards and Change Agents**

Teachers play an important role in the new and emerging learning landscapes. Most of the visions which are underlying the emerging learning landscape are based on the image of an autonomous learner. In reality—this is often not the case. Therefore teachers have an enormous important role to steward learning. They are no longer content bearers who impose their learning objectives on learners but rather stewards who coach learners to gain autonomy in the emerging processes of creating of content, sharing experiences, reflecting learning, and assessing ones progress. Teachers have to know how to use ICT to support teaching from both technical and pedagogical point of views. They need to think familiar issues and problems from new perspective, changes in teachers pedagogical thinking, and attitudes toward open-learning landscapes.

While moving from traditional classrooms into Web-based learning worlds, the teacher's role is definitely no longer to deliver information; it becomes more of a facilitator than a traditional lecturer. Teachers have to help learners to deal with new information tools and the management of knowledge. Teachers select and filter the information for the learners' considerations, provide thought-provoking questions, and facilitate discussions. The responsibility for learning is transferred from teacher to learner. Teachers serve as facilitators, while learners develop their personal understanding of content and social interaction by collaborating with each other (Yang and Cornelious 2005). Besides being a facilitator, teachers also bear the role of learning designers. Learning designers are stewards who provide open- and networked-learning environments. Coming often from a tradition of instructional

designers, the role of learning designers is more open and only rooted in the instruction paradigm. It is important for the teacher to motivate learners to become autonomous learners (Yang and Cornelious 2005), to steward the through their technology enhanced learning environment, and to motivate effective online discussions conclude the role of the teacher by listing five key roles in online as follows:

- **Motivator:** keeps learners' motivation and activity at a high level by focusing attention on learners, by offering proper learning materials, and by maintaining collaboration and cooperation. The teacher is asking, demanding, inspiring, and persuades learners to participate. The teacher speaks out and responds to learners' activities, pays attention to the learners, creates learning opportunities, and motivates learners by his or 30 her own actions. Personalized feedback is very essential also in online learning.
- **Networker:** establishes networked relations to different experts and specialists and offers these resources also for learners use.
- **Organizer:** organizes teaching and learning environments that drive learners into collaborative learning by making choices between different tools, applications, and media. The teacher organizes structures and sets the rhythm for the course, sets goals, conducts the course based on a flexible study plan, makes stimulating questions, and comments and guides the discussion.
- **Signaler:** creates nets of communication, informs and guides learners during the learning process by making specific instructions and guiding questions on the Web. The teacher creates the rules for communication and ensures that all learners will understand them.
- **Instructor or tutor:** makes it possible for learners to learn better, but without controlling too much. The teacher helps learners to understand, guides them towards active learning, and enables the process where the learner internalizes the external knowledge, and transforms it into his or her own knowledge.

According to Tella et al. (2001), there are also other roles for teachers, such as *assessor*, *supporter*, *expert*, or *storyteller*. However, the teacher needs the same kind of didactical and pedagogical skills as in the traditional classroom, but the form of teaching and the teaching environment is changing. Furthermore, teachers, as well as, learners need new computing and communication skills. Teachers need to create deep and durable learning in the virtual learning environment. Hacker and Niederhauser (2000) offer five principles to help teachers to accomplish this goal:

1. **Active participation in learning** by changing the learner's role from passive recipients of knowledge to active constructors of their own knowledge. It is the teacher's job to promote this change. Learners become meaningful makers who actively select, organize, and integrate their experiences with existing knowledge. Learners are required to construct deep explanations, justifications, and reasons for what they think and do.

2. Effective use of examples because it has been shown that case-based instruction suits computer-based technology. By using examples that are anchored in contextualized and authentic cases, we can improve educational outcomes.
3. Collaborative problem solving that can increase specific problem-solving abilities and general metacognitive understanding of how, when, and why to use problem-solving strategies.
4. Effective use of feedback means that feedback is commensurate with performance—too much feedback may prevent learners from learning how to regulate their performance on their own.
5. Motivational components that enhance self-efficacy and perceived challenges. All four previous principles of instruction will also enhance the motivation to learn. As a conclusion, it is important for the teacher to master and design delivery strategies, techniques, as well as, methods for teaching online courses (Yang and Cornelious 2005).

## Chapter 4

# Open and Community-Based Learning Ecologies: Peers and Networks

Networked learning is a perspective which has been elaborated in recent years and which is predominantly represented by George Siemens from the higher education institutions Manitoba in Canada. It routes in the fact that Internet-based learning scenarios increasingly create distributed environments and knowledge is not as such a value in itself but the connections individuals create and use, and their ability to employ these connection to acquire relevant information and knowledge are in the foreground (OECD 2007; Dutton/Helsper 2007). These changing learning contexts influence the creation of open-learning scenarios and at the same time correlate with existent learning theories. The question arises if new theoretical approaches are needed or whether the existent ones are sufficient to analyze open-learning contexts. To discuss this question, “Networked Learning” as a prototypical representation of open-learning contexts will be analyzed in this chapter.

The Internet is one of the main drivers. With its implementation, the documented and available knowledge grows exponentially resulting in increasingly rapid knowledge cycles, which are especially high in the computing segment, where knowledge is already obliterated after 2 years. This development is again one of the main reasons for the growing relevance of life-long learning as it becomes less important to possess (fast outdated) knowledge but rather relevant to be able to make new knowledge accessible. Following this thought, it becomes evident that the ability to synthesize and recognize connections is a crucial skill in the information age. With this development another one comes along: The growing demand for competence development (The official Bologna Process Website 2007–2010) as competences are intertwined with the idea of making learners “fit” for their unknown future, not least for a permanently changing labor market, and to deal productively with the existing competition as well as to shape one’s own biography (i.e., “be employable”).

However, the implementation of the internet also offered new ways of representing as well as accessing information for learners and of connecting with others for exchange and learning—particularly used by kids and young students.

Many reports and national surveys demand therefore that educational concepts have to take this new reality into account, and deal with new tools productively in order to achieve greater student engagement. While it seems obvious that the learning context is changing and while we can observe the availability of new tools, the very nature of this change is often misinterpreted as the postulation for new educational concepts often leads to an uncritical rejection of existing concepts and theories. However, in many cases it can be shown that open-learning concepts build on existent learning theory (which will be amplified in the following).

## 4.1 Learning Networks Between Peers

Learning in Web 2.0 learning landscapes is strongly based on social networks, and communities play a fundamental role. Peers are indispensable for the learning process. They do not only stimulate your own learning process by providing recommendations on materials, Weblinks, any kind of content they have generated which you can use to introduce yourself to any topic but also they can provide reflection of your own learning, a point of discussion, and validation for yourself. Peers—like colleagues, co-learners, fellow students—are important and essential for learning in open-learning landscapes. But who are our peers and what are in fact the main characteristics of a peer?<sup>1</sup>

As a part of a community, a peer is, or should be open-minded, perceptive, and aware of his competencies and responsibilities in terms of effort, attention, and reaction rate. Peers are expected to possess strong relational and auto-critical skills, exhibit good relationship management, and a deep subject matter competence in a specific sector of knowledge (see Fig. 4.1).

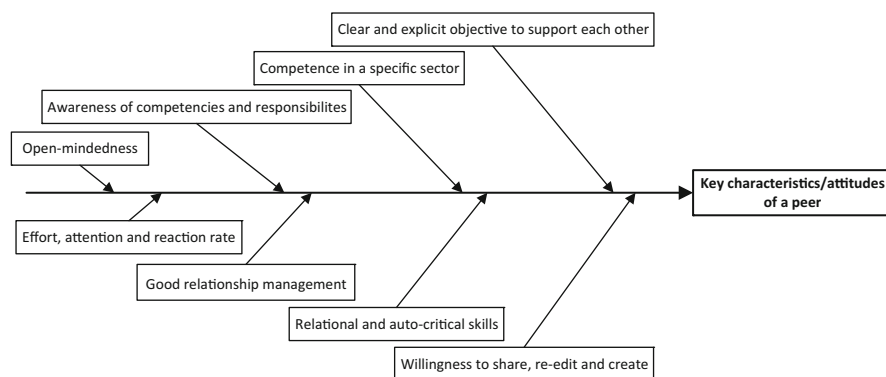
How then do we come from a peer to a group? The peer group or learning group which develops into the community and network. As a peer group we would like to define the group of peers relating to a single person or group. First of all it is agreed that due to the multitude and diversity of peer groups and communities, it is virtually impossible to determine concrete characteristics which hold true for all types of peer groups. Therefore, the following general characteristics of a peer group are specified in order to give a useful overview instead of a clear cut definition.

Peer group members of a learning process are willing to share materials, re-edit existing ones, and create knowledge. They have a clear and explicit objective to support each other in order to grow together. Authority within the group is very seldom based on a hierarchy of roles. Instead, in most communities, a level of members develops naturally in accordance with the degree of participation, quality of contributions, and the confidence acquired from experience and competencies.

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<sup>1</sup> The following description is based on results which have been produced in the research project QMPP (<http://www.efquel.org/peer-production/>).



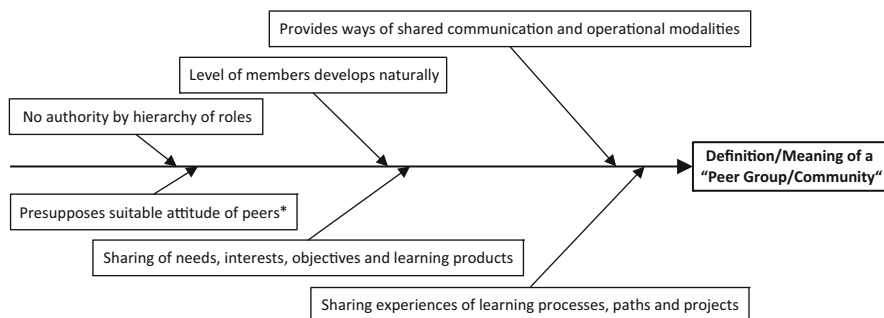


**Fig. 4.1** Key characteristics/attitudes of a peer

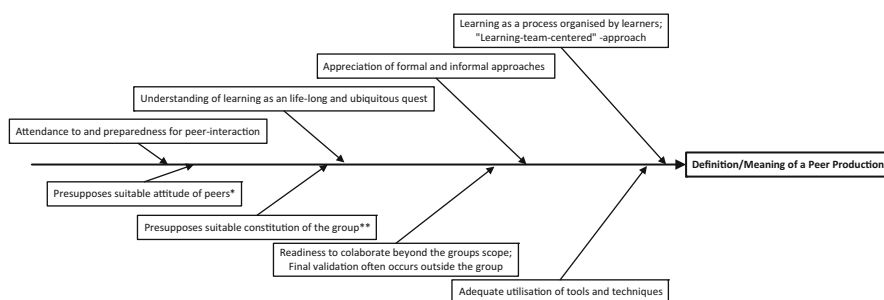
Furthermore, openness along with recognizing and exploiting ways of shared communication and operational modalities are considered to be essential for a peer group to prosper. This is even more evident in face of the understanding that sharing should not be limited to the exchange of learning products but also explicitly address the sharing of experiences concerning learning processes, paths, and projects (see Fig. 4.2).

Peers in e-learning 2.0 scenarios often produce learning materials together. This can be seen not only in the case studies given in this book but also in already introduced collaboration initiatives like Wikipedia (<http://www.wikipedia.org>). The general idea behind such a peer-produced learning material is that the digital content for learning is created, edited, and/or enriched by peers—in other words by people on the same hierarchical level. While this definition in a e-learning 2.0 world refers to mainly digital materials, such peer-production processes are of course long introduced in the offline world, when teachers create and share lesson plans and learning materials together. In addition it is important to notice that this collaboration very often occurs not only within one organization, e.g., a university, but also across organizations and in the corporate sense can even reach across different companies or suppliers. The most significant characteristics of peer production are recognizing the value and necessity of complex processes within peer production, such as creation, sharing, and editing and the readiness to be open and receptive towards inputs from different individuals, fields, and directions. Additionally it is presupposed that sharing the same fields of interest and objectives is a prerequisite (see Fig. 4.3).

In conclusion, the understanding of how we produce, share, edit, and enrich materials in a Web 2.0 world together with others is building on the above-described elements of our peers and the processes within a group of peers. Peers can be understood as the smallest unit of groups, networks, and communities and thus deserve this close look and analysis.



**Fig. 4.2** Definition/meaning of a "peer group/community." \*As defined in the chapter/graphic "Key characteristics of a peer"

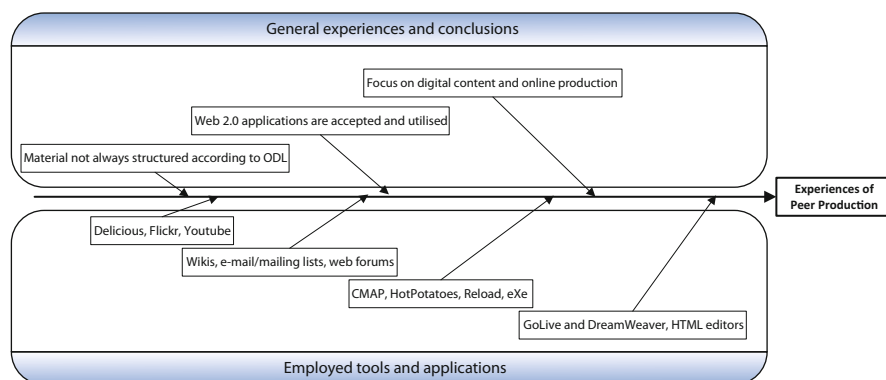


**Fig. 4.3** Definition/meaning of peer production. \*As defined in the chapter/graphic "Key characteristics of a peer"

Mostly peer-produced materials first occur as small artifacts which are not already structured according to clear-cut curricula of open distance and technology-enhanced learning courses. Moreover, the peer production not always relates to the actual development of materials but on the design and reuse of technology-enhanced learning-based processes and pedagogical models.

Learning content management systems such as Moodle (<http://www.moodle.org>) and collaborative platforms such as Basic Support for Collaborative Work (BSCW) can be deployed as supporting tools and technologies. Web 2.0 applications such as Delicious, Flickr and YouTube, as well as wikis, Weblogs, and more traditional methods of online collaboration such as e-mail/mailling lists and Web forums are frequently used. For the creation of materials a wealth of open access tools is existing nowadays. The Center for Learning and Performance technologies of Jane Heart provides a comprehensive list and a description of tools to be used to create technology-enhanced learning content: <http://www.c4lpt.co.uk/Directory/Tools/instructional.html> (see Fig. 4.4).

Through peer production, a wealth of materials can be produced together and then afterwards also used together. The final products of peer production can be learning objects (LOs), storyboards of LOs, articles, reports, course notes, book



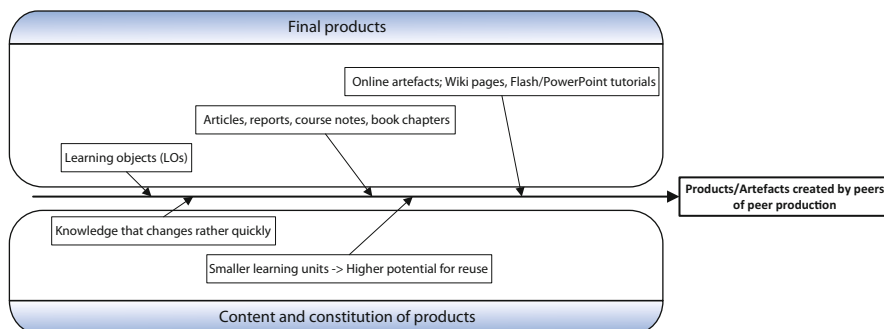
**Fig. 4.4** Experiences extracted from peer production

chapters, and other types of documents. Online artifacts such as wiki pages and tutorials in Flash or MS PowerPoint are produced as well. As far as the reuse of products in peer production is concerned, it can be seen that the granularity determines the ease of reuse. Furthermore, content predominantly produced and reused by students such as course notes can be exchanged via shared repositories and “recycled” and enhanced by teachers to become complementary educational material. Models like course structures also have great prospects for reutilization (see Fig. 4.5).

In general, learners are required to be open-minded and act autonomously in order to cope with the requirements of peer production and learning 2.0 environments, in terms of intensified ways and methods of communication, interaction, participation, and (self)-assessment. They must empower and enable themselves to critically enhance and reflect on their own competencies, and willingness/readiness to share, contribute, and collaborate. In this regard, peer production communities are urged to prepare and adjust their members and the given social, environmental, and technological surroundings to the shifting requirements concerning the understanding of shared needs, interests, objectives, and products. Supporting this, the focus needs to be on creating tools, guidelines, and policies that enable and drive peers to produce preferably small, structured, and standardized learning objects that are easy to assess and cope with for potential future reuse and transparent in terms of their creation process.

## 4.2 Learning Networks: Moving from a Constructive to a Connected and Networked Learning Paradigm

Open learning landscapes build on networked learning. Learning is no longer seen as something an individual does for storing new knowledge but something which is an activity in which a learner is gradually growing into a community and is



**Fig. 4.5** Products/artifacts are created by peers of peer production

introduced into a certain field of practice—until he or she finally becomes an expert and center of the community. George Siemens (2006) has elaborated on these issues quite extensively. The professor from the University of Manitoba in Canada works on the issues of how learning can be seen from the point of view of a network rather than from an individual aspect. He believes that the network metaphor for learning is so fundamental that he outlined an open-learning theory which is entirely based on connections between learners, knowledge, and the world—accordingly it is called connectivism.

Connectivism is a theory describing how learning happens in a digital age. Siemens states that learning is a peer to knowledge. To learn is to come to know. To know is to have learned. We seek knowledge so that we can make sense. Knowledge today requires a shift from cognitive processing to pattern recognition. Our metaphors of thought over the last century include statements like “Our mind is a black box—We cannot fully know what goes on.” Instead, we focus on the behavior—the observable manifestation of thought and cognition. However, networked learning and connectivist theory is based on the fundamental axiom that our mind constructs our reality. We engage in active construction of our reality through the ideas and resources we encounter (Siemens 2006: 26). Three of the leading influential learning theories are Behaviorism, Cognitivism, and Constructivism, which form gravitation centers for the explanation of learning strategies. From these different perceptions about learning also different points of view for instruction styles can be deduced. Baumgartner and Payr (1997), e.g., allocates three teaching styles (cf. Table 4.1 first three columns), “Transfer,” “Tutor,” and “Coach,” to these three theories: (These styles are though not mutually exclusive; on the contrary they all are needed for different purposes, domains, or parts of the learning process, respectively, different learning contexts.)

1. Behavioristic Learning strategies assume that the lecturer knows what the learner needs to learn. Learning is seen as a conditioned reflex, which is acquired through adaption. Behaviorists try to breed the “right” reaction through an adequate input, which is supported by an appropriate feedback (i.e., transfer model).

**Table 4.1** Extended instruction styles (based on Baumgartner and Payr 1997)

Transfer	Tutor	Coach	Network: (self-initiated connecting)
Factual knowledge, “know-that”	Procedures, methods, “know-how”	Social practices, “knowing-in-action”	Networking competence (to navigate through connections and knowledge), learning in networks, “know-who”
Knowledge transfer	Dialogue	Interaction	Network-interaction: self-directed Networking
Knowing, recognizing	Practicing, problem solving	Acting reflective, inventing	Acting reflective in networks, validation of knowledge and competences through (peers in) networks
Repetition of correct answers	Selection and appliance of correct methods	Managing complex situations	Creation of supporting-networks
Memorizing, recognizing	Ability, skill	Responsibility, life experience	Social competence, life-long learning
Teaching, explaining	Monitoring, helping, demonstrating	Cooperating, conjointly implementation	Self-organized cooperation

2. Cognitivism emphasizes on the contrary the inner processes of the human brain and tries to explain the in-between processing. Hereby, many different characteristics can be found, however they grasp the process of human thinking as information processing (i.e., brain  $\approx$  computer). “Problem solving” takes the center stage in the learning process here. According to Cognitivism, learners try to solve problems self-directed, whereby the exercises are already “didactically adjusted” respectively simplified. Here, the lecturer is equivalent to a tutor.
3. The Constructivism reckons reality as an interactive conception. Learning is seen as an active process, where knowledge is constructed in relation to former experiences in complex and real situations. The constructivist perception highlights the personal experience. Learners have both to manage complex situations and generate the necessary way of looking at a problem. Here, the lecturer is in accordance with the picture of a “coach” or moderator.

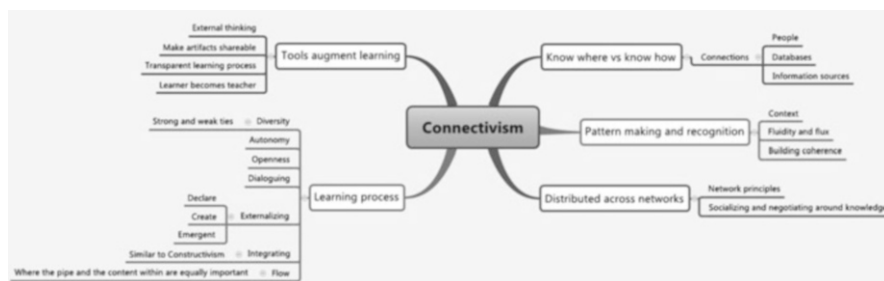
Behaviorists focus hence on the pure transfer of knowledge; the learner is equivalent to a knowledge recipient. A self-directed learning process is thus not intended. Cognitivism has a changeover position in the paradigm change. Interaction between learner and instructor plays already an important role. The learner starts to explore knowledge—but within a framework, defined and didactically adjusted by the instructor. The constructivist perception comprises already a self-directed learning approach, moreover social practices, interaction, and reflection into its explanations: The learner constructs its knowledge more or less on its own; the instructor is only a “learning-attendant.” However, it is still configured under

the assumption of an “instructor”—even though the instructor acts as “coach” respectively “attendant.” A further step in the development of self-directed learning would hence be, if the learner “constructs” its “attendant” on its own—like in Networks respectively communities, where, e.g., peers, in form of supporting networks, to take over this role. If one factors the new media into these considerations, an even bigger resource pool (of peers respectively connections and thus for both knowledge and the reflection process) becomes apparent as time and place independency exist. To explain Networked Learning, the Constructivism’ thoughts are thus picked up and continued, whereby it is drawn on aspects of Connectivism and social network analysis (SNA) for further analysis.

Connectivism explains hereby the relevance of connections for learning in an increasingly conjoined world. According to Connectivism learning occurs when a learner connects to a learning community and feeds information into it (Kop and Hill 2008). Through this self-initiated process new connections between ideas and concepts are established. Understanding arises through applying meta-cognition by selecting and evaluating the network’s elements to maintain the useful ones and eliminate the rest. Learning is hence an active self-directed “knowledge creation process” instead of a passive “knowledge consumption process.” (Siemens 2008) Due to networks, learners are enabled to access (through their connections) new information easily and update expert knowledge in a self-directed and reflective manner.

SNA helps further to point out the different types of connections and their potential for learning. Although, any network relation has potential for learning (e.g., Hanft 1997) as both an exchange of knowledge and learning (through the interaction process) occurs, some connections are more beneficial than others are. This aspect can be amplified by referring to Granovetter’s theory “Strength of Weak Ties” (1973), where he highlighted different kinds of connections in a network and their implications. He differed between strong (e.g., close friends) and weak ties, whereby the latter are more loose contacts and serve as bridges between different networks, which in turn support the information flow—not only between networks but also within networks. This means transferred to learning: Learners need to configure their own learning landscape by developing a portfolio of weak connections to max out their information access.

Considering Connectivism and SNA against the background of Constructivism, a definition of Networked Learning can therefore be as follows: Learning occurs through (1) both an active, self-directed, and reflective exchange of knowledge between entities, which are preferably connected through weak ties to max out information and (2) a self-guided social-interacting process, which leads to the creation of one’s own supporting network. Additionally, Networked Learning is (3) per se a situative process as connections respectively topics are selected according to the (actual) point of interest. After highlighting the concepts and three established instruction styles, a fourth one can be derived from Connectivism, which is based on the concept of Networked Learning and focuses on a social, active and (peer-) reflective connection process instead of an “external initiator” (see Table 4.1).



**Fig. 4.6** Aspects of connectivism

“Networks” as possible fourth “instruction style” illustrate therefore a further step in the development of self-directed learning in the learning and instruction process, which has though not to be understood as exclusion of the established ones but rather as “add-on.” The extension enables learners to create their own supporting network, which can act as their personal “learning attendant.” Therewith learners have the opportunity to learn in a self-directed way when- (what-) and wherever they want to, whereby they can draw on a worldwide resource-pool of knowledge and “peers” as learning attendants through whom (external) reflection and validation is given.

According to Siemens, learning takes place in a learning ecology (see Fig. 4.6). It is an enculturation into a community and is set in the context of culture (values, beliefs, and perspectives), conduits (language, media and technology), and different dimensions of learning and different concepts of learning. It is taking place in a range of modes, reaching from informal to formal, in communities and self-learning processes and as performance support and through mentoring approaches (see Fig. 4.6).

Siemens advocates that learning and teaching are just two sides of the same process: “The learner is the teacher is the learner.” (ibid.: 42) And later explains that when

“we stop seeing knowledge as an entity that is possessed within a person and start to cast it as a function of elements distributed across a system, we notice a dramatic impact on the education process: the educator becomes a supporter (not the center), the content is not as critical as the connections, learners find value in their aggregated perspectives, learners become content creators, and learning is continuous, exploratory, and sustained (not controlled or filtered by only one agent)” (ibid: 44).

According to Siemens (2005) radical changes in society and culture evoke a new perspective on individual and organizational learning that cannot be explained by any existing theories to learning. Siemens supports this thought by quoting Vaill (1996: 42) who states that

“learning must be a way of being—an ongoing set of attitudes and actions by individuals and groups that they employ to try to keep abreast of the surprising, novel, messy, obtrusive, recurring events”.

In the same instance Hay et al. (2008) suggests that student learning quality is a product of student activities and behaviors rather than any direct consequence of taught content (see Table 4.2).

To support the need and urgency for a novel and comprehensive theory to learning, Siemens (2005) enumerates the facts that (1) the half-life of knowledge is shrinking drastically, (2) many of the processes previously handled by individuals can nowadays be replaced or at least supported by technology, (3) informal learning gains in significance compared to formal education and linear acquisition of knowledge, (4) the deployment of technology defines and constantly redefines the way we think, (5) to know where is becoming more important than to know-how or to know-what and finally, (6) learning has become an ubiquitous and lifetime-lasting process, which is merging learning and work-related activities and therefore interconnects individual and organizational learning. Further on, Siemens sees a crucial flaw in the fact that the majority of existing theories, such as behaviorism, cognitivism, and constructivism (1) consider learning to predominantly take place within the individual and (2) only regard parts of learning that are concerned with actual process of learning but not the value, currency, and much less the assessment of the attained knowledge. Downes (2007) strengthens this notion by pointing out that learning is not anymore about the acquisition of a simple and durable truth or solely composed of mechanisms of memorizing or storing facts. According to Downes (*ibid.*), learning is not a process of transfer at all<sup>2</sup> and is neither structured, controlled, or processed, nor reliably produced by means of pedagogical, behavioral, or cognitive processes.

Siemens believes that the strong growth and accessibility of information reduces predictabilities and creates chaos as a new form of order, which challenges learners to self-organize and to recognize, combine, and adjust to the dynamically altering patterns and connections in order to make meaning out of it. Facing the massive increase in knowledge development and alteration, Siemens outlines that experience cannot possibly be considered the primary source of knowledge generation and learners have to rely on knowledge held by other individuals. This implies that learners expand, exploit, and revise their scope of available networks. Against these assumptions Siemens defines learning as “actionable knowledge” and thus indicates that knowledge does not necessarily need to reside within the individual to be rapidly acquirable and exploitable. In the same way the current state of knowledge is actually less valuable than the potential of knowing, which depends on available connections and the ability to quickly build, evaluate, harness, and combine those. In this regard Siemens considers decision making, such as what and when to learn from whom, as well as recognizing and adjusting to pattern shifts as an essential part of the learning process. According to Downes (2007), connectivism proposes

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<sup>2</sup> Actually Downes explanations are to certain extents contradictory in this regards as he states a few paragraphs later that “transfer occurs through a process of connecting.” Inevitably this ascertains that the ideas of connectivism as a new paradigm within the fields of learning theories are not yet consolidated and perfected.



**Table 4.2** Types of learning in a learning ecology (Siemens 2005: 40)

Tool	For what	Why?	Good for. . .	Drawbacks
Formal learning	Courses Programs Degrees – Defined by established knowledge – Structure imposed by experts in advance of learning	Structure, serve stakeholders, focused	Initiating learners who are new (foundation building)	When learning at the point of need is required
Experience/ game	Problem-based learning. Ill-defined learning targets User defines process and space Adaptive, flexible	Experiential (learning as by-product of other activities)	Life challenges	If foundations are not in place (or the learning experience [as games] needs to provide foundation)
Mentor	Personal guided and facilitated by expert	Accelerate personal performance	Personal, relevant knowledge/ learning	Foundation learning, high bandwidth
Performance support	Learning at the point of need Can rely on other learning approaches	Point of need, competence, assistive	Short, focused learning	Developing foundations of a discipline
Self-learning	Meta-cognition Learning about learning Learning that is personally driven	Learning for pleasure, personal competence	Exploring areas of personal interest	How do learners know what they need to know?
Community-based Learning	Diversity “Wisdom of the crowds” Social/ dialogue	Create multifaceted view of a space or discipline	Dialogue, diversity of perspective	Foundational high time requirement
Informal learning	Conferences Workshops Colleagues	Serendipity, constant, ongoing, in the stream	Continual, ongoing, multifaceted	Chaotic, not always valued, scattered

that knowledge transfer occurs through a process of connecting. As a consequence learning occurs as a distributed process in a network, based on recognizing and interpreting patterns. Accordingly it can be argued that the learning process itself is influenced by four elements of the semantic condition which are diversity, autonomy, openness, and connectedness. Summarizing, the idea of Connectivism emphasizes that learning is no longer an internal, individualistic activity and the potential to learn what we need next is more important than what we know now, or as Siemens puts it, “the pipe is more important than the content within” (Siemens 2005).

### **Networked Learning: A Case Study**

“Connectivism and Connective Knowledge” was a course run by George Siemens and Stephen Downes in October/November 2008. It was offered through the Higher education institutions of Manitoba, Canada, as a for-credit course, but it was also offered for free to any person interested. It came to be called the MOOC—Massive Open Online Course.

Participants: George Siemens and Stephen Downes acted as instructors. Logistical internet support was offered by the Higher education institutions of Manitoba, by Dave Cormier, and by Stephen Downes. Overall, 24 students registered and paid fees to the Higher education institutions of Manitoba. Another 2,200 people signed up for the course as nonpaying participants. All aspects of the course were offered to both paying and nonpaying participants, with the exception that paying participants submitted assignments for grading and received course credit. Participants registered from around the world, with an emphasis on the English- and Spanish-speaking world. The course was offered in English; Spanish participants translated key materials for their own use. The course attracted a wide range of participants, from college and higher education institutions students to researchers, professors, and corporate practitioners.

Solution: The course was designed to operate in a distributed environment and was not tied to a single platform or technology. With the assistance of higher education institutions staff and Dave Cormier, George Siemens, and Stephen Downes set up the following course components:

- A wiki, in which the course outline and major links were provided
- A blog, in which course announcements and updates were made
- A Moodle installation, in which threaded discussions were held
- An Illuminate environment, in which synchronous discussions were held
- An aggregator and newsletter, in which student contributions were collected and distributed.

The instructors encouraged students to create their own course components, which would be linked with the course structure. Students contributed, among other things:

Three separate Second Life communities, two of which were in Spanish  
170 individual blogs, on platforms ranging from Blogger and edublogs, to

WordPress and more

Numerous concept maps and other diagrams

Wordle summaries

A Google group, with a separate group for registered participants.

A wealth of experiences has been posted since the course took place and can be seen in the Web.

(Cited from [http://oerwiki.iiep-unesco.org/index.php?title=Access2OER/Case\\_Studies](http://oerwiki.iiep-unesco.org/index.php?title=Access2OER/Case_Studies))

### 4.3 Networks or Communities: Different Learning Ecologies

Networks or communities are significant for the knowledge exchange, especially of tacit knowledge. The socialization process, defined by Nonaka and Takeuchi (1995: 63), that means the exchange of tacit knowledge, can be supported through networks. Experiences and skills of, e.g., students or employees can be linked so that innovations can be developed. Networks increase the willingness to share knowledge, because of the reduction of the anonymity and establishment of trust. Especially networks, where its members hold similar interests and complementary competences, are significant for innovation because the members can share similar or useful experiences and inspire each other. Through these networks, an employee's individual competences can be strengthened to organizational competence. Moreover, organizational competence advances the business development again (North and Reinhardt 2005: 98–99). In addition, networks enable the members to learn from each other and to develop new knowledge collectively. The contact network between the competence carriers will also be improved. After the relevant competences are explicit, a knowledge broker takes care of the initialization, coordination, and maintenance of the competence network (North and Reinhardt 2005: 99).

Networked learning is about learners learning in a self-directed way in social networks and learning communities. Although being used often in a synonymous way, there is a difference between communities and networks—especially with a view to learning. Building on Granovetter (1983) the difference between communities (as closer relationships) and networks (as more loose relationships) becomes apparent. Granovetter explores in his influential social network theory the

strength of weak ties (ibid.). Accordingly, interpersonal relationships in networks have two basic forms: strong ties, which are based on the immediate work and life contexts and build the core of communities, and weak ties, which stretch beyond our direct and close contexts into other domains and are rather peripheral to the communities we are participating in—they in turn constitute networks.

While strong ties are characterized as regular and continuous, weak ties are rather sporadic, casual, and serve us as bridges between different social spheres and domain contexts. For learning, this differentiation can be utilized in powerful ways when peripheral influences can be brought into the center of interaction and learning. It is exactly this characteristic which allows to link peripheral influences into closer social network structures. The benefit being that networks (weak ties) help to transmit innovative ideas and new knowledge into communities and serve as a transversal bridge between people of different contexts and domains. Gronevetter emphasized that weak ties—i.e., relations in loose networks—are high loaded with information, whereas strong ties are significantly less loaded with information. This somewhat paradox situation seems to be of enormous importance for learning. While strong ties are reliable and steady and give opportunities for deep exploration, irritation and innovation emerge from weak ties as they bring in the unexpected. Weak ties can function as opportunities for new information, can help to be exposed to unpopular opinions, and bring in fresh food for thought into learning communities. Learning communities are characterized as social entities with a high degree of overlap in interests, close connections, and steady continuity. Networks are more distinct, of episodic and sporadic nature, and give access to unexpected and new ideas. Social learning and community infrastructures are building on these concepts and allow learners to tie elements of informal, sporadic, innovative, and critical nature from their networks into their more formal and continuous learning communities. The interplay between the expected and steady on the one hand, and the innovative and disrupted on the other creates learning environments which allow tying in networks into communities. In order to tap these benefits, learners need to learn to configure their own personal learning landscape—not only in a technical way when it comes to building the personal learning environment but especially with a view to assembling weak and strong contacts and connections into the portfolio of their own social learning landscape. While Granovetter's strength of weak ties idea has been originally perceived as a paradox and counter-intuitive idea, it unfolds with the application of social software as a Webbased extension which shows the power of communities and networks for learning.

This (constructivist) *learning-theoretical* perspective fundamentally questions the *possibility of instruction* in networked learning ecologies. This is argued for by saying that a self-directed system (learner) cannot be determined by its environment but only perturbed and stimulated by it. This has consequences for the organizations of learning environments. While it has been argued that learning is an individual experience which needs *learner oriented* (cf. Holzkamp 1993: 184) planning and organization processes, social learning communities, and networks are configured and activated *learner-initiated*. The concept of self-directed learning comes to be of enormous importance to social learning—from an *educational-theoretical* point of view.

**Table 4.3** Different conditions and subjects of quality in communities vs. networks

	Learning communities	Learning networks
Interests	Largely overlapping	Distinct
Ties	Strong, high cohesion	Weak, low cohesion
Information load	Low	High
Characteristic	Expected information, deep exploration	Innovative, unexpected

Self-directed learning is often understood to be a *generic term* for all forms of learning in which the learners can determine and be responsible for their learning processes respectively tasks, methods, and amount of time invested themselves (and/or take part in the decision) (Deitering 1996: 45).

George Siemens relates directly to this when unfolding his theory of connectivism (Siemens 2004a). He states that his design of connectivism goes beyond the former learning-theoretical approaches of behaviorism, cognitivism, and constructivism and takes into consideration the growing tendency of learners to use informal, networked, and electronically supported learning. Learning is increasingly viewed as a continuous, lifelong process, which extends into the fields of work and leisure time activities and thus influences the individual as well as the organization and its connections among each other. Siemens goes on to explain that knowing the “who” and “where” of a subject is more important today than the “how” and “why.” Even though Siemens’s design is not clearly distinct from existing learning theories and describes more of a network-oriented learning philosophy, the approach is valuable as it clearly emphasizes the development of social learning and social processes as the basis for learning and interaction processes which take place (see Table 4.3).

To conclude, it can be said that social learning approaches building on e-learning 2.0 contain fundamental and profound changes. Not only does the form of learning itself become a topic in the process but the principle of how learning functions is partially redefined and cannot be grasped by using existing learning-theoretical approaches.

## 4.4 Communities of Practice

According to Wenger et al. (2002) communities of practice (CoP’s) are groups of people who share a concern, a set of problems, or a passion about a topic and who deepen their knowledge and expertise in this area by interacting on an ongoing basis. [...] These people don’t necessarily work together every day, but they meet because they find value in their interactions. As they spend time together, they typically share information, insight, and advice. They help each other solve problems. They discuss their situations, their aspirations, and their needs. They ponder common issues, explore ideas, and act as sounding boards. They may create tools, standards, generic designs, manuals, and other documents—or they may

simply develop a tacit understanding that they share. However they accumulate knowledge, they become informally bound by the value that they find in learning together. This value is not merely instrumental for their work. It also accrues in the personal satisfaction of knowing colleagues who understand each other's perspectives and of belonging to an interesting group. Over time, they develop a unique perspective on their topic as well as a body of common knowledge, practices, and approaches. They also develop personal relationships and established ways of interacting. They may even develop a common sense of identity. They become a community of practice (Wenger et al. 2002: 4–5). Wenger (2005: 4) summarizes four premises, which are useful for the understanding of learning and knowledge, independent from the learning theory:

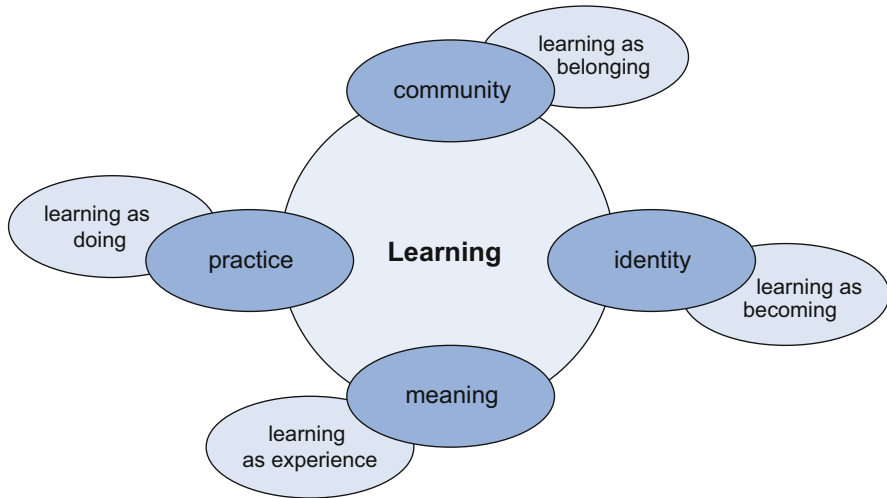
- “We are social beings. Far from being trivially true, this fact is a central aspect of learning.
- Knowledge is a matter of competence with respect to valued enterprises—such as singing in tune, discovering scientific facts, fixing machines, writing poetry, being convivial, growing up as a boy or a girl, and so forth.
- Knowing is a matter of participating in the pursuit of such enterprises, that is, of active engagement in the world.
- Meaning—our ability to experience the world and our engagement with it as meaningful—is ultimately what learning is to produce.” (Wenger 2005: 4)

He focuses on learning as social participation, which means to be an “active participant [. . .] in the practices of social communities and [to construct] identities in relation to these communities” (Wenger 2005: 4). Therefore, Wenger (2005: 4–5) defines four components which “characterize social participation as a process of learning and knowing.” (Wenger 2005: 4–5). These components (see Fig. 4.7) are described in the following and are represented in Wenger (2005: 5):

- *Meaning*: a way of talking about our (changing) ability—individually and collectively—to experience our life and the world as meaningful.
- *Practice*: a way of talking about the shared historical and social resources, frameworks, and perspectives that can sustain mutual engagement in action.
- *Community*: a way of talking about the social configurations in which our enterprises are defined as worth pursuing and our participation is recognizable as competence.
- *Identity*: a way of talking about how learning changes who we are and creates personal histories of becoming in the context of our communities. (Wenger 2005: 5)

The integration of these four components represents the analytical power of the CoP (Wenger 2005: 5–6). CoP exist for a long time and are mostly unconsciously in everyone's everyday life, e.g., in schools, at work, or in the family (Wenger 2005: 7). He describes and sharpens this concept, so that it can be effectively used as a “thinking tool” (ibid.).

CoP are organization-dependent, optional, informal networks, which advance the enduring and collectively learning processes. The members of CoP control



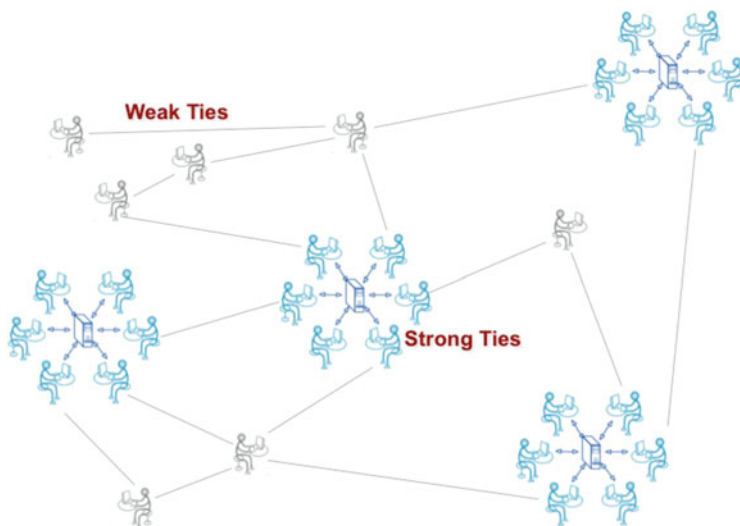
**Fig. 4.7** Components of a social theory of learning: an initial inventory (based on Wenger 2005: 5)

the learning processes themselves, though executives may support them, in the beginning, as a mentor (Erpenbeck and Sauter 2007: 178). The members deal with similar duties and interests. They support each other to solve problems, share their knowledge, and generate new knowledge or tools. In addition, they create norms for the communication and treatment among each other. The interactions result in a common knowledge stock (Erpenbeck and Sauter 2007: 173–174). This corporate feeling, which will be created autonomously, leads to a sense of identity, motivation, trust in each other, and job satisfaction (Erpenbeck and Sauter 2007: 174; Reinmann-Rothmeier et al. 2001: 92). CoP mostly base on systems of the KM or CM (Erpenbeck and Sauter 2007: 174). CoP improve the learning or knowledge-oriented culture, because the barriers of sharing knowledge are reduced and trust is established. It is significant that the CoP are optional because otherwise, they would limit the cultural effects and the desired intention. Therefore, they cannot be regulated from the management for certain business objectives. (Reinmann-Rothmeier et al. 2001: 92–93)

Erpenbeck and Sauter (2007: 177) define five preconditions, which have to be fulfilled in order for a successful learning in a community:

- There do not have to be any regional or hierarchical barriers
- The meetings have to be consequently attended
- Openness for new ideas or solutions
- Creating of a lasting mutual trust
- The informal exchange needs to be possible

In contrast to CoP, there are learning communities. Its members have mostly similar working places and share learning experiences in common qualification



**Fig. 4.8** A model for networked learning: enabling people to connect, share and co-create

measures. Tutors will mostly control these communities. The goal of the learning communities is to develop individual competences further through teamwork. The main difference between CoP and learning communities is that the learning communities will be controlled, and that the learning communities focus on the individual learning, whereas the CoP focus on the organizational learning (Erpenbeck and Sauter 2007: 178). The focus on participation means for organizations, “that learning is an issue of sustaining the interconnected CoP through which an organization knows what it knows and thus becomes effective and valuable as an organization” (Wenger 2005: 8).

De Vries et al. (2008: 1) “developed a Model for Networked Learning, supporting employees to create, lead, and participate in social networks enhancing their daily performance. [They] implemented and experimented with an innovative tool to help employees to learn in social networks” (ibid: 1). They state that networked learning was first understood as traditional learning supported by computer-assisted forms. Nevertheless, today, this view is overtaken by the so-called second generation networked learning approaches (ibid: 2) and is different from the traditional learning. Significant is the “connectedness of people and artifacts in a network” (ibid), whereas the technology integrates the “delivery of knowledge with interaction, communication and application” (ibid). Web 2.0 applications or other advanced technologies can support the networked learning very well (ibid).

In addition, Vries et al. (ibid: 2) distinguish between the collaborative and collective learning. The collaborative learning focuses mostly on the individual needs (see Fig. 4.8), whereas the “collective learning aims at collaborative performance and innovative knowledge creation within a team” (ibid: 2).



The developed model can be seen in the figure above. The four main complementary aspects *Profiling*, *Connectedness*, *Knowledge*, and *Business Development* have a great impact for the knowledge development. These four areas are shortly described in the following (ibid: 4):

- Profiling: is about the employee's social and organizational aspects
- Connectedness: is about the "connection between people and people and resources" (ibid: 4) and focuses on the relevance of networks
- Knowledge: is about the relevant knowledge and information
- Business Development: is about the crucial elements for a successful networked learning

The areas themselves are not innovative, but the combination is. Vries et al. (ibid: 4–6) developed, on the base of this model, a tool called YUNO, which supports the finding of peers and resources. YUNO contains an instant messaging tool and deals with functionalities for the search and the information retrieval and for the presentation of the findings in a map.

"Organizational settings as CoP's and the emergence of collaboration tools, often called social software, such as wiki's and blog's, make new ways of communication and collaboration possible" (ibid: 9).

## Chapter 5

# The Foundations for Quality of Open-Learning Cultures

Welcome to the world of quality. It is a diverse landscape with many urban spots in which well-introduced concepts dwell and then again other more remote areas in which quality has not yet found a spot to settle. In this section we will introduce you to the basics of quality concepts and the quality debate in the field of education. With quality you truly stand on giants shoulders—so many concepts have been developed already and have been tried and modified to serve better needs of institutions, educational professionals, and learners. The question of quality has always been an important and a challenging one for universities, as a whole, and for all stakeholders working and learning within their walls. Students need to learn and study in as good as possible educational scenarios; educational professionals strive to provide their courses and teaching with as creative ideas as they can; and the universities' management is concerned with advocating strict quality regimes for programs and tries to shed light on outcomes and indicators, so that higher education institutions are doing well in rankings.

With technology entering the higher education institutions, the question of quality has been asked anew with renewed energy and relevance and has been redefined. Quality no longer is an add-on to teaching and to learning, but quality is the constituting issue. The question is not how quality can now be developed or assured for the emerging technology-enhanced learning scenarios but rather how technology-enhanced learning can be provided in a way so that high quality learning scenarios unfold. It is a shift from quality for technology-enhanced learning to quality through e-learning.

More and more higher education institutions declare it their strength that technology-enhanced learning is an integral part within the course of studies. The previous chapters have shown that technology-enhanced learning does no longer play the role of an additional subcategory of learning and teaching in higher education but that learning in networks has become an integral part of higher education institutions operation. Even more ICT can today be considered a catalyst for major innovation and ICT plays a key role in transforming Universities. It is also true that today most of European higher education institutions are integrating technology in their daily work.

Nevertheless, coming to the area of open-learning cultures, still a broad absence of overarching quality experiences exist. Given the profound changes from a more transfer and instructive orientation in education to a more self-directed and interactive, contributing orientation we are now looking into the question how quality concepts have to be adapted to these open-learning cultures. We will do so in two steps. First, in this chapter, we will describe how quality for open-learning cultures is constituted in general. We will deal with the question “what is quality?” and how can it be described. We will show where the current debate in quality for open-learning cultures stand. A brief overview of the existing quality approaches will be presented and discussed. Afterwards the present approaches will be reviewed critically with regard to the limitations of quality development for open-learning cultures. We will present a checklist which show which questions have to be dealt with to develop quality for open-learning cultures. In the then following chapter we will describe concrete methods how quality can be assessed for open-learning scenarios.

Quality is always a function of the context to which it is applied. It is deeply rooted into the underlying cultural, national, local cultures, and conditions. It is tied to educational beliefs and values and governed—in the case of educational organizations—to overarching legislation, mostly on a national level. Because contexts and conditions change over time, also the quality concepts change over time. The challenge with quality concepts is that—while overarching concepts, like TQM, EFQM, standards, and guidelines for higher education, etc. exist and have a certain attraction for educational organizations—each specific implementation of such a quality concept in a concrete organization looks different. It is always governed by the same principles but comes to a different shape and form in the concrete actions and values of its performing stakeholders—given the different natures of context they have to respond to.

Assuring the quality of education provision is a fundamental aspect of gaining and maintaining credibility for programs, institutions, and national systems of higher education worldwide. Despite a long and generally successful track record, open and distance learning (ODL) is still required to prove that the quality of student learning is at least equivalent to face-to-face teaching. A comprehensive quality assurance (QA) system can help accomplish this. QA is designed to *prove* and *improve* the quality of an institution’s methods and educational products and outcomes. In ODL, this includes developing and producing learning materials, academic programs, services and support, as well as standards of student learning. A systematic and consistent QA system helps to establish an institution’s good reputation and image. It includes defined standards of achievement, documented procedures for all identified processes, established ways of responding to issues, and clear accountability for outcomes. The result is greater public confidence, more satisfied students, efficient processes, and staff who are confident in their jobs. Students are more likely to experience better quality instruction, learning materials, and interactions with the institution and its staff, leading to enhanced learning outcomes. Satisfied students are more likely to choose that institution again or to recommend it to others.

Due to the manifold shapes which technology-enhanced learning and distance education can take on in different educational sectors and in various learning scenarios, the related concepts of quality management, quality assurance, or quality development are also many. It is clear today that there is no *single golden path* and no *one-fits-all* concept but that enhancing quality demands for a continuous effort. Still, the question of quality touches the heart of the learning debate—quality can be regarded more and more as a subjectively, individual, and collectively influential category: How should learning opportunities look like and learning environments be structured, now and in the future? How do we meet the demand for building high-quality learning capacities which are needed to transform our societies into learning societies? Quality in the field of technology-enhanced learning is an especially diverse field because it brings together the field of education, technology, and economy in order to contribute to societal development, to innovate formal, nonformal, and informal learning opportunities and empower learners as citizens to take part in our emerging learning and information societies. The debate on quality is a debate about how learning and education should look like in the future, about values and cultures, and it takes place on basis of diverse experiences and convictions.

The current use of instruments and strategies shows that quality is a much sought after but diverse discussed topic: Wirth (2006) reports that an empirical study among European higher education institutions ( $N = 241$ ) revealed that more than half of the institutions at least partly apply a quality model for technology-enhanced learning (53 %) (PLS Ramboll Management 2004: 70). The instruments used are mostly focusing on *learner satisfaction* or *evaluation by external peers*, creation of an *internal quality system*, *external quality assessment*, and *guidelines as well as standards* for course development. In addition to this, 24 higher education institutions reported that they applied the same quality assurance methods for technology-enhanced learning as they do for traditional educational settings (ibid). Research by Fraunhofer IPSI (2003: 32) confirms these findings: In the corporate sector, *user feedbacks* are very much in the focus, only very few organizations are opting for quality certificates (only 7–8 % according to a study conducted by Unicmind 2002: 26). Additionally van Buren and Erskinen (2002) report of findings which show that over three-quarters of all evaluations conducted are targeting *users' satisfaction* and not *learning success*, *transfer* or *return of investment* of an educational process.

Balli et al. (2002: 17) state that an increase of quality-related activities took place during the last years. In particular, the increasing number of country-, region- and even world-wide rankings and benchmarks are dedicated indicators for this development (see Danish Evaluation Institute 2003: 21; Federkeil 2004: 63). The reason for this rise in quality-related activities can be attributed to increasing competition, the improvement quality strategies themselves (see Falk 2000: 557), a growing understanding of quality as a major differentiator on the market, and changing legal limiting factors (see Bötzel/Krekel 2004: 25; Bötzel et al. 2002: 36).

However, the debate is not so much characterized by accurate empirically defined concepts and operationalized notions but rather constituted of a dense

bundle of a broad range of arguments, objectives, convictions, and procedures. It is less characterized by its precise definition but rather by its positive connotation. The very impact of the word “quality” on behavior demonstrates its meaning. The word merely signifies “composition” (Latin: *qualis*) but in everyday language it is used to distinguish a characteristic of an object as being of a higher caliber than that of another object. Fröhlich and Jütte emphasize that even if quality management approaches nowadays’ may not be completely satisfying yet, they at least must be seen as a chance to become more sensitive towards current challenges and innovative ways to solve quality issues (Fröhlich and Jütte 2004: 13).

## 5.1 Revisiting the Quality Debate in Education

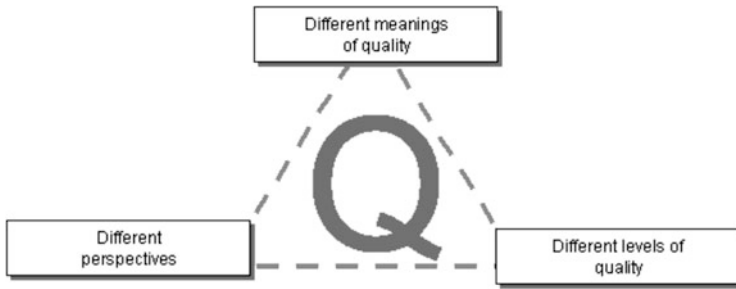
At the institutional level, developing and implementing policies to assure quality in ODL is often done under the umbrella of international agencies or associations. For instance, the Asian Association of Open Higher education institutions—AAOU—operates the AAOU Quality Assurance Framework which contains nine components and 107 quality criteria.<sup>1</sup> Comprehensive and consistent guidelines for quality assurance in ODL are provided, for instance, also by associations such as the International Council for Open and Distance Learning (ICDE) and the International Centre for Distance Learning (ICDL). Likewise, the Norwegian Association for Distance Education (NADE) offers institutional quality standards, broken down in four clusters: information and guidance, course development, instruction, and organization. Some institutional providers may prefer to go down the route of the TQM model or ISO certification. A major regional quality assurance initiative in Europe is ENQA—the European Association for Quality Assurance in Higher Education. ENQA disseminates information, experiences, and good practices in the field of quality assurance in higher education to European QA agencies, public authorities, and higher education institutions. In 2005, it published the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ENQA 2005).<sup>2</sup> Furthermore, some relevant steps have been made in the area of peer-review and self-assessment in which HE community organizes and commits itself in order to improve the quality of its technology-enhanced teaching and learning processes.

Quality—first of all—is a broad and abstract term, for which there is neither an overall accepted and overarching definition nor a standard solution in terms of its assurance or development (Ehlers 2003). As a matter of fact, the complexity and multidimensionality of the interpretation and understanding of quality can be illustrated by means of examining quality definitions from various sources. The ISO9000 (2000a) standard defines quality as the “degree to which a set of inherent

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<sup>1</sup> Based on research report of the project UNIQUE: <http://unique.efquel.org>

<sup>2</sup> [http://www.enqa.eu/pubs\\_esg.lasso](http://www.enqa.eu/pubs_esg.lasso)



**Fig. 5.1** Aspects influencing the notion of quality (Ehlers 2003)

characteristics fulfills requirements” (Tricker and Sherring-Lucas 2005: 4). The *American Society for Quality* specifies quality as “a subjective term for which each person or sector has its own definition.” In order to systematically depict the concept of quality and for the purpose of providing a general frame of reference for the subsequent discussion, we have already suggested distinguishing between three fundamentally different dimensions of quality (Ehlers 2003) (see Fig. 5.1):

- The interpretation and meaning of quality
- The perspectives of different stakeholders on quality
- The levels of quality (input, process, output quality)

The first aspect influencing the quality debate encompasses the various different interpretations of the meaning of quality. Numerous definitions from various fields are available. For example, a widely used definition in economics is a product-oriented understanding which views quality as a physical characteristic of an object. A diamond or a piece of gold have a certain eight and the value is determined on this grounds or on the cut, make and art involved in assembling it, polishing, or presenting it. In these fields, value is expressed in prices which are astonishing stables through the globe. Of course such a definition cannot easily be transferred to the educational sector. Unlike businesses education does not involve classic supplier–customer relationships in which a supplier or producer produces a good which is then afterwards handed over to a customer who then employs it for a certain use. Education is rather a coproduction of a certain achievement. The educational environment (consisting of teachers, the infrastructure, the wider context, and other learners) is in a coproduction or coevolution relationship with the learners.

In education, we can currently identify about five different meanings of quality (Harvey and Green 2000):

- Quality as an exception, describing the surpassing of standards
- Quality as perfection, describing the state of flawlessness
- Quality a functionality, referring to the degree of utility
- Quality as an adequate return, measured by the price–performance or cost–benefit ratio

- Quality as transformation, describing the above mentioned coproducer relationship between the learner and the learning environment and referring to the learners' progress in terms of a learning process

The *second factor* that impacts the notion of quality is based on the diversity of educational processes or levels. Based on Donabedian's classic paradigm for assessing the quality of health care (Donabedian 1980), Ehlers (2003, 2004) argues that the educational process can be subdivided into three sections, which are input or structure quality, process quality, and output quality. The last aspect in the quality debate is that of the differing perspectives of the various involved stakeholders and refers to the fact that the interests and quality requirements of, e.g., companies, tutors, learners, etc., are so divergent that the notion of quality as a static element must be replaced by an understanding of quality as a negotiation process between the different stakeholders who are involved in the social process (Ehlers 2003).

However, there are not only different interpretations of quality but also different *stakeholders' perspectives*: the enterprise as a user of a training measure, the tutors supervising an e-learning program, the human resource managers who establish a framework for continuing education in their sector, and the learners. Each of these players generally has divergent interests and differing quality requirements and interpretations. It is therefore important to regard quality not as a static element but as a negotiation process between different stakeholders involved in the social process.

Hence, the definition for the concept of quality is a question of perspective, of level, and of meaning. It is a subjective issue which needs to be objectified through transparency and open negotiation and needs to be managed with regard to the surrounding environment and the particular discipline of education and learning in order to achieve an adequate understanding. Since educational institutions can differ quite significantly, regarding their purpose, background and resources (EUA 2006: 9) as well as in terms of objectives of quality development, to which we can refer to as "quality profiles," it is a consequence that not a single country has yet reached a social, political, or academic consensus regarding the definition of educational quality (Ehlers and Pawlowski 2006a). Furthermore it is important to create a common understanding of the theoretical foundation to discuss the applicability of existing quality approaches.

The first aspect refers to quality development (QD) which "covers every kind of measurement, assurance, optimization, and continuous improvement of the quality within given systems" (Ehlers 2004a). Quality assurance (QA)—on the other hand—can be viewed as a concrete process based on concrete tools to ensure that quality goals are met. Therefore the main objective is to implement the formal evaluation, monitoring, and auditing processes to verify and reflect on the institutions' level of compliance with regulations and its effectiveness of performance.

Quality in education is a multidimensional concept (cf. Donabedian 1980; Ehlers 2004b). Therefore different approaches to define quality are available

(cf. Quartapelle/Larsen 1996). Berkel (1998) suggests a three-dimensional scheme—originally for service quality—which has been adapted to the field of educational processes in the following description. It locates quality within three poles (ibid.: 19):

- Objective vs. subjective: This dimension addresses the question *who* is defining quality criteria and values. If the quality value is defined only through the performance indicators of a product, Berkel (1987) terms it *objective quality*. The quality characteristics then have to be a part of the respective good—which is only partially true for the field of education. For education, the quality characteristics are usually defined through individual persons or committees in a *subjective* way. The definition of quality requirements through clients or learners is a *subjective* quality definition.
- Inherent vs. instrumental: This dimension relates to the question *where* quality can be observed and *when* it becomes explicitly measurable. *Inherent quality* relates to quality which can be observed as lasting and inhering quality of a product. If quality reveals only through a service process and thus the participation of clients, we refer to it as *instrumental quality*. Often objects with inherent quality characteristics (e.g., Learning Management Systems, learning materials, etc.) are used in an *instrumental* way.
- Endogenous vs. exogenous: If organizational processes and structures are taken into account when evaluating and/or assuring educational quality, we speak of *endogenous quality*. If the educational institution or organization is not part of a quality evaluation, we can speak of *exogenous quality*. The quality evaluation of education needs an active process. *Endogenous* and *exogenous* can be used to distinguish between quality assessments which are either directed to the surface structure (exogenous) or the deep process structure (endogenous) of an educational service.

According to Berkel's (1998) distinction, the quality of education is subjective, instrumental, and endogenous. It reveals that quality in education is a client-oriented concept where the quality requirements are defined in participation between clients and providers. The quality of education is therefore constituted only through mutual interaction of learners with their learning environment (cf. Brindley/Walti/Zwaki-Richter 2004), and the evaluation of quality is influenced by organizational processes within which the educational process takes place (endogenous).



## 5.2 Quality from an Educational Perspective: Participation and Coproduction as Conditions for Educational Quality Development

The understanding of quality of education is often referred to in a simplistic manner as a “result,” a “product,” or a “substrate” of a process. However, it is more complex than that—and that is where many purely process-oriented quality approaches fail to deliver: quality education needs to be defined as a relation, as a ratio between the different stakeholders (e.g., learners and teachers) and elements which educational scenarios are composed of (e.g., learning environment), like the learners, the teachers, the peers, the learning environment, and others. The negotiation between these stakeholders and element is a necessary condition to arrive at a comprehensive quality understanding for education. Ehlers (2008) has shown that quality in education needs is in principle a concept of quality of participation and negotiation.

Classical service theory is conceptualizing the interactive relation between the actors of people-oriented services with the categories “production” and “consumption” (cf. Gross/Badura 1977). It is argued that education is a symbolically mediated productive–active interaction and production process. This process involves learners together with other actors (other learners, teachers, etc.). It therefore has to be conceptualized in form of a *pro-gumption* rather than a production–consumption relationship (cf. Martens/Prosser 1998). The addressees of educational services are therefore conceptualized as active “coproducers” and not as passive receptors. According to Meyer and Mattmüller (1987), services are thus not defined by an absolute quality but rather by their quality potential and can only release this potential through the active involvement of the client. Le Preau (2005) even stressed that quality can *only* be defined through taking into account the view of as many stakeholders as possible. He refers to the stakeholders of education as quality experts.

A parallel can be drawn here to newer approaches of change management in organizations. Doppler and Lauterburg (2005) describe the importance of flat hierarchies in organizations and the importance of individual empowerment and competence development of the organizations’ actors for constant adaptation processes to a changing environment. Hiatt and Creasey (2003) and Champy (1995) emphasize in their approach especially the role of the individual actor for change processes in organizations. It has to be noted that in all these approaches the ability of individuals to competently engage into and self-organize change processes is emphasized as strong as structural management issues (cf. Hall/Hord 2001). Organizational change and learning thus relies on individual change (cf. Boyce 2003).

For the design of high-quality learning environments this view bears some consequences: Learning environments—a term which is used here in the broad sense, referring to the sum of all processes constituting the learning opportunity including all resources and persons which are part of it—have to be designed in a way that it is possible for learners to express their demands and preferences as part

of the construction process. Only then learners can bring in their experience, backgrounds, and demands, thus enabling providers to design learning environments in a way which allow an active learning, problem solving, and competence development oriented towards the learners individual needs. The assurance of quality exclusively reached through predefined, static frameworks (e.g., standard evaluation questionnaires) often does not sufficiently pay attention to this particular necessity of coproduction in educational settings (cf. Baijnath/Singh 2001; Freesen 2002). From this perspective, it is important that the development of quality strategies takes into account an active negotiation process as a specific condition of quality development and supports it proactively. Quality management concepts therefore have to include a negotiation component. This requires an extended understanding of process-oriented quality development models and asks for competence development and staff professionalization components within quality strategies.

From a sociostructural point of view, we can moreover observe that clients' identity structures change and standard biographies become more and more heterogeneous and therefore lose their prognostic value for planning educational processes (cf. Beck 1986). Quality concepts which are still based on concepts of traditional biographies are losing their analytic powers over educational processes. If the described necessity of individualization of educational processes is taken seriously, then it is difficult to formulate fixed and prescriptive quality standards for progressively heterogeneous situations. They have to be exchanged against flexible negotiation frameworks which allow taking into account the learners' situation and perspective in a coproductive process (cf. Pruitt/Carnevale 1993). To use a participatory quality strategy means to support or hinder negotiation processes but not to substitute them through management processes any longer.

### **5.3 The Learner's Role in Quality Development: An Important and Often Misunderstood Principle**

It has always been the dream of researchers and developers of technology-enhanced learning systems to build a system which automatically takes into account all factors relevant to a high-quality learning experience. At the same time the reality of today's technology-enhanced learning proves different. Twigg (2001) puts the finger on it by pointing out: "All too frequently, even innovative institutions fall back on a one-fits-all approach [...] forgetting that students are different and have different needs" (Twigg 2001 in Schulmeister 2004). It is this field in which the debate of a learner-related quality development is set.

Although learner orientation is a widely accepted principle, the quality debate is often focusing on other aspects. Therefore it seems to be legitimate to ask the question why a learner-oriented approach is important at all. Schulmeister (2004) reports findings which show that the diversity and the differences—in motivation

and anxiety—amongst students<sup>3</sup> are highly influential on learning processes and outcomes. These differences are most likely rooted in different experiences, attitudes, and approaches towards learning. He concludes that “disregarding the diversity of students may result in failure” (ibid: 2). Regarding *learning styles* and *cognition* he emphasizes the importance to treat students as individuals rather than as a homogenous group (ibid: 3) and argues that one of the most severe errors made in technology-enhanced learning today is the neglect of the diversity of students and the choice of a learning model that does not allow differentiation and learner-oriented learning.

However, learner orientation, on the other hand, is not meant to base e-learning arrangements purely on *learner satisfaction* and *learners' wishes* and preferences—apparently there is no connection between pure satisfaction scores and learning outcomes (Sloan-C 2003). At the same time the number of variables of student diversity and their interactions is too high, fitting teaching methods to learning methods has no sound basis in research and there is no empirical evidence telling us which instructional methods are most suitable for which individual attitudes. Also, the gap between theoretical assumptions and pragmatic decisions when designing learning environments and when teaching, cannot be bridged by simple deduction, but is subject to norms and value judgments (ibid.) in the learning and also in the teaching situation.

The field of learner-oriented quality development is still an open debate. So far, it is unclear which learner variables/characteristics have which impact on learning. From a scientific point of view, the concept of learner orientation therefore remains in the dark. Quality certificates claiming organizations compliance to learners' requirements (e.g., the German Certificate LQW II) have to be aware of that and have to show that this is not rooted only in trendy debates.

Despite the educational reality and the uncertainty of how the concept of learner orientation can be put into practice, a close look at the international educational debate reveals that most educational organizations are completely learner oriented in their educational philosophy. Most of the official policy documents follow a modern constructive rhetoric and take on the leitmotiv of a competent-acting individual, developing skills and competencies in a self-organized manner for the active participation in the “knowledge society.”<sup>4</sup> For the sector of higher education

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<sup>3</sup> The study was set in the field of motivation and anxiety towards learning statistics in university courses.

<sup>4</sup> The terminology for the transformation of society into a knowledge-based, information-based, media-based society are divers. There are constantly new concepts which show that the industrial age has come to an end: “Global Society” (Rost 1996), “Knowledge Society” (Stehr 1994), “Media Society” (Mettler von Meiborn 1994), or “Information Society” (Bühl 1995). They all focus on one and the same phenomenon which is described as “knowledge Society” in the article, as it is elaborated in the theory of knowledge Society by Peter Drucker (1969), Daniel Bell (1973), and Nico Stehr (1994). This theoretical approach is especially interesting for education because it focuses not only on scientific knowledge but emphasizes the rising importance of knowledge as a basis for social interaction and relations.

this can be seen in the Bologna declaration (European Commission 1999), for the field of vocational education and training this can be derived from the Copenhagen declaration (European Commission 2002c) and for schools this is discussed in all European countries after the PISA results hit the ground.

It is the expressed goal also in most of today's mission statements and educational philosophies of professional staff working in the educational field to put the learner in the center of attention, resp., in the driver's seat. No actor in the field of education be it on the policy level, the administrative level, in the field of pedagogical practice, as well as in educational science is taken seriously in the debate anymore, when failing to mention this point as the basic principal of the presented activity or concept.

However—there are as many opinions as to what learner orientation actually is, as there are stakeholders promoting it. It is neither clear what learner orientation exactly means, how it can be put in practice, and thus if it is taken as the basis of educational offers often remains unclear. Learner orientation can be seen a one myth of educational reality today, often quoted, and less often achieved.<sup>5</sup> There is no theory for “educational quality” so far,<sup>6</sup> and thus no theoretical definition of the concept *learner-oriented quality*. However, there are theoretical approaches to the question what successful learning is. It is useful to have a look at these concepts in order to be able to define the topic of learner-oriented quality in a more concise way. The following account of a *subjective learning theory* allows a concise description of aspects and factors of learner-oriented quality development.

A great theorist of learning and learning processes is Klaus Holzkamp, a German professor, teaching and researching at the University of Hamburg. He is viewing learning from a subjective perspective. His subject-scientific approach to learning (Holzkamp 1993) is suitable to bring light into how a learner-oriented quality concept could be conceptualized. It emphasizes that learning from a subjective point of view is not considered enough in previous learning theories. He concludes that the learner is not enough represented as a self-directed individual in learning theoretical approaches so far. According to his opinion, behavioristic and cognitivist approaches view learning as an externally controlled process and that learning in traditional learning theory is not viewed from a *learners subjective perspective* (ibid: 14). It is obvious that this is also the reason for the lack of theories elaborating the idea of quality for learning from a subjective point of view.

According to Holzkamp, learning activities are mostly conceptualized as imperitence for the learning subject—and learning and teaching are seen as directly

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<sup>5</sup> The survey “E-Learning in Europe—Results and Recommendations, Thematic Monitoring under the Leonardo Da Vinci-Programme” (Attwell et al. (Ed.) 2005) even comes to the conclusion that the majority of European e-learning projects (56 %) are technology driven, as opposed to 44 % characterized as learner oriented.

<sup>6</sup> Sometimes the lack of theory for educational quality is substituted by the debate on competencies—on the learner side, or a discussion on professionalism—on the teachers side. However, there are theories which a “quality theory” could be grounded on, like learning theories, evaluation models, socioeducational theories, etc.

dependent on each other. Consequently, learning takes place best if a teacher supplies learning activities and materials and/or the curriculum is institutionally organized. In such approaches it is theoretically not explainable *why* an individual should learn out of one's own motivation and will. The perspective of the learning subject is systematically denied.

Holzkamp suggests a different approach. He views learning from the subjective point of view of the individual learner: Accordingly humans make their world accessible in an intentional way and acquire it from their own perspective. Reality is interpreted from their own point of view against the background of their experiences and intentions (ibid: 21). Subject form a "center of intention" and experience others as well as "centers of intention" with their own perspective-related viewpoint. From this point of view, the world is interpreted as significantly and meaningful. These meanings are turned into "propositions for actions" on which activities and decisions are based (ibid: 26). "Learning," in his approach, is represented as "action which differentiates itself from other actions by its goal to extend one's own control possibilities" (ibid.).

At this point the parallels between a subjective theory of *learning* and quality development from a learners' perspective become obvious: if learning takes place and is judged against individual propositions then also the assessment of the *quality* of a learning process takes place against the background of these propositions. It can be assumed that these propositions determine the individual learners' (quality) requirements because they determine the demands for learning to realize the propositions. If learners have the possibility to assess a learning situation—in our case an e-learning-arrangement—they will do this against the background of their individual propositions, e.g., the intention to extend their competences in a certain field.

Since it can be assumed as safe that the propositions of learners are heterogeneous—individually different—quality development according to the principal "one for all" does not seem to be feasible anymore.

To define a *learner oriented quality concept* means therefore to take the learners motivation, cognitive and personal situation/context as the basis for the assessment of learning scenarios—and not "objective"/external criteria. Objectivity in this sense has no relevance for learning quality, because learning is a process deeply rooted in the subjective situation/context and the requirements and propositions of the learning individuals.<sup>7</sup>

The problem at this point is an economical one: If learner-oriented quality is defined in this way, then a variety of learning scenarios for the same course might

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<sup>7</sup>For an account of the debate of the concepts of "objectivity" and "subjectivity" in science, see Ehlers (2004b).

be needed to fulfill the divers' demands of learners' individual learning propositions. How can this be done in a realistic way? Today there is no answer to this question. It is the challenge of quality research to find methods and ways how to take the learner's requirements as a starting point for the design and provision of learning scenarios. Schulmeister (2004) argues here in the direction of open-learning environments (OLEs) which allow learners to explore their own learning path—and thus gain an individualized learning experience according to their individual demands.

Of course it can be argued that learning is not always taking place on basis of free individual chosen propositions but also in “forced,” prescribed compulsory environments (e.g., in schools). The assessment of learning arrangements would then also take place on basis of not of individual propositions but rather of externally defined propositions, because the objectives are defined from the outside. Holzkamp (1993) takes this into account and differentiates between two kinds of learning: defensive learning and expansive learning. Defensive learning is a learning mode which takes place under the threat of sanctions. Under the threat of sanctions, learning can be pretended or it comes to defensive learning. That means that the learner then tries to overcome the given problem through learning but tries to get it accomplished with as little effort as possible.

For the definition of a subjective quality concept, on the contrary, the concept of expansive learning is more suitable. Expansive learning starts with a perception of a discrepancy between what I would like to do and what I am able to do. Due to individual propositions it appears meaningful to extend the control possibilities in order to master a specific task or action. Thus an interest in learning develops. The learner perceives his/her current abilities as being not sufficient for the current task. This perception of self-inadequacy is called “experience of discrepancy.” Learning is not initiated by instructors in this case. Learning is initiated because a current learning object evolves from a potential learning object due to an experience of discrepancy. This releases an “emotional condition of inadequacy” (Holzkamp 1993: 214). Such an experience is the basis for learning motivation. In order to evolve into expansive learning, the learner must anticipate that the “extension of control” is attainable through learning. If the necessary learning effort is appropriate, it is reasonable to learn expansively in order to solve the problem. According to this thesis, namely that each person acts on reasonable basis, learning follows as a necessity. The willingness to accept adversities and even setbacks is higher than with defensive learning. Expansive learning is to this extent more effective than defensive learning.

As a basis for learner-oriented quality approaches and strategies, the subject-scientific approach to learning appears to be more suitable than objective assumptions because it can be assumed as safe that the motivation and personal situation for learning is highly heterogeneous, especially in adult learning. On basis of Holzkamp's theoretical approach, learning is thus a process which is rooted in subjective motives and in each individual context. A learner-oriented quality concept has to take this into account for the definition of quality.

A look at most of today's concept of teaching reveals the consequences which a learner-oriented quality concept points at. It is widely believed that there is a direct connection between good teaching and good learning. However, Siebert (1985) points out that teaching aims can be abused if they include the idea that learning can be completely planned, that learning processes are determinable by instructors, and that learning results are quantifiable (ibid: 67). Holzkamp (1993) disagrees with this "fiction of administrative planability" of learning processes as well. It is denied in this viewpoint that subjective reasons could motivate learning and learning is thus reduced to "Teaching equals Learning." This Fallacy of Teaching = Learning holds that 1 h of teaching would have the effect of 1 h of learning (ibid: 397). This idea ignores subjective interests of learning. Learning output must be planable. The initiation of expansive, and therefore more effective, learning however, is subject to the coincidence of experiences of discrepancy and school cannot want to promote expansive learning.

A learner-oriented quality concept thus means to take into account that the assessment of learning environments takes place on basis of individual propositions. This means from a learner's point of view quality of technology-enhanced learning would be a judgment of how suitable an e-learning environment is designed to help them overcome their personal experience of discrepancy through learning.

Here, a paradox can be noted: If a learning scenario is provided only according to the wishes a learner has then—it can be argued—it is not possible for the learner to go beyond the borders of what he knows so far—to develop beyond his limitations. This is one main question of today's pedagogical practice which has remained unanswered so far—empirically and theoretically: How can a learner be guided in his/her self-development process, resp., self-guided learning process, by external guidance? (Can you educate someone to freedom?) It is the well-known change of the role of a teacher as "sage on the stage" to the "guide by the side" which is needed, to accomplish this challenge, and which is addressed in most of the modern constructivist rhetoric. Teachers in this understanding take on the role of facilitators. It demands for a pedagogical model which allows the learner to first develop his/her own questions and then develops solutions him-/herself in an exploratory manner (the connection to Schulmeister (2004) and his concept of OLEs is as well suitable here).

The relation between instruction and construction remains unclear in today's pedagogical practice and is everyday filed by pragmatic activities of teachers in schools and universities. However it remains unclear how the two—instruction/teaching and construction/learning—can form an alliance. Mandl and Reinmann-Rothemeier (1995) point out that construction and instruction cannot be realized according to the "all or nothing" principle. Learning requires always motivation, interest, and activity on the learner's side. Learning is thus always constructive and is has to be the utmost goal of every teaching to allow and stimulate construction processes for learners. On the other hand, learning can be improved through the

“guide by the side.” Mandl and Reinmann-Rothmeier emphasize therefore that learning is also interactive and that teaching has the central task to support learners and to help them with instruction (Mandl, Reinmann-Rothmeier 1995: 52; Wellenreuther 2004: 69).

Taking into account the subjective theory of learning from Holzkamp and the paradox of instruction and construction, a learner-oriented quality concept can be described as follows: Learner-oriented quality development means to take the personal, mental situation, as well as the learners propositions as the reference point for the decision which have to be made in the design and delivery process for e-learning environments. It includes enabling learners to have discrepancy experiences and to guide learners (instructional component) in their own construction processes (construction component).

## 5.4 How to Involve Learners into Quality Development

Quality development has to involve all stakeholders into a negotiation process (Manelle 2000) in which the learners needs are taken as a reference concept. This is confirmed by Ravichandran and Rai (2000): “Participation of users, vendors, and developers in the core design and development process promotes mutual understanding of issues and constraints to be addressed to improve quality” (Ravichandran, Rai 2000). Tietgens (2003) views stakeholders in a learning context as quality experts. They are exposed to a constantly changing environment and can only themselves assure that education meets the requirements which they have in accordance with their contexts. In this sense a participation of learners in the design process of e-learning environments is of key importance (Tietgens 2003). Zech (1997) suggests to combine an external perspective of the organization of learning—the learners perspective—with an internal perspective—the point of view of the educational organization. He suggests viewing the different perspectives as equally important.

To provide learning according to the learners’ needs, we suggest to conceptualize quality development should be conceptualized as a negotiation process in which all stakeholders—and thus also the learners—have to participate in. It means to abandon the idea of using “objective,” externally prescribed rules and norms for quality development only, and to negotiate the norms and rules amongst the stakeholders. An important part in quality development—the definition of objectives and values—then is negotiated. This has two implications: (a) All stakeholders of the e-learning process are involved and have to be able (or have to be empowered) to voice their needs in the quality development process. (b) Quality is a continuously ongoing process which is not ending after a defined time when goals and objectives have been defined and measures are in place. They constantly have to be adapted to the contexts and requirements of learners and other involved stakeholders. In order to enter into a negotiation process to find objectives for quality development four aspects have to be defined: (1) the participating group



of persons (stakeholders), (2) the object of negotiation, i.e., what has to be negotiated, (3) values and norms that have to be negotiated, and (4) a method of negotiation has to be specified.

A practical example: In a school, three teachers want to introduce a new e-learning-course in history. They have to prepare materials, define teaching/learning objectives and have to find a suitable methodology. For quality development we would now need to define the four afore mentioned factors.

1. The first factor answers the question: Who has to be involved in the quality development process? The participating group of persons, the stakeholders, would be obviously the teachers themselves and the students, learning in the course. In a broader definition we would also take into account the participation of the parents and their interests, of the school management and its interest; we would also have to take into account the interest and rules of the school administration to a certain extent—and in the broadest sense all this happens on grounds of the interest of the governmental regulations. It is important to take into account the views and perspectives of relevant actors and weigh their participation in the negotiation process. Not all of them should have veto rights, for example.
2. The second factor answers the question: What is the object of quality development? The object of quality development in our example is the new program. However, a program is a complex construct of objectives, materials, methodologies, organization, and structure. We can break it down into several components and processes. A concise operationalization is therefore necessary to isolate certain objects (e.g., the course structure, materials, learning objectives, etc.) in order to enter into a straight negotiation process about how these processes should be carried out properly. It is important to note that not all of the defined stakeholders need to be present for all negotiation objects. The parents for example would probably not be interested to participate in questions of administration (e.g., room scheduling, staff planning, etc.) and the administrative staff would probably not be interested to participate in curriculum planning.
3. In a next step we would then have to answer the question: How is quality defined for each process step? This question relates to possible quality models, e.g., pedagogical models, technical- or business models, learner's subjective quality conceptions. At this stage, quality development needs norms and values which define "good" quality. Coming back to the example from the beginning, the teachers in the conception/design process could, for example, decide to choose an instructional model of self-organized, collaborative learning. The quality therefore would be high if this goal would be met in the learning situation. For

that reason, they would have to choose an analysis instrument which is capable of examining exactly this goal.

The fourth and last step then has to answer the question: How is the negotiation process performed? Methods of negotiation have to be defined and the questions of responsibility have to be clarified. It is important to weigh the votes of stakeholders for the decisions which have to be taken—not everyone is equally responsible for every decision. In our example a series of workshops would have to be organized for the teachers themselves, for presenting the ideas and discussing them with parents and all other stakeholders.

The example shows how all actors can be involved into the negotiation process. They all participate in the process of defining the quality objectives and the criteria/indicators which are necessary to decide if an objective has been fulfilled or not. The described factors characterize the negotiation process and can be taken as a basis for structuring further research activities. Rather than closing the debate with this concept there are a lot of questions arising from the concept of learner-oriented quality development, starting with the issue of the necessary organizational culture for allowing such participative processes and which negotiation methods are suitable and not finishing with the professionalization of facilitators which guide such a learning-oriented environment.

## **5.5 A New Approach to High-Quality Learning for Autonomous Learners and Educators: Quality Literacy**

The analysis of many quality tools, approaches, and quality development processes in organizations have resulted into the notion that successful quality development in education demands certain skill of those involved—not only from the teachers and other educational professionals but also from the learners. These skills can be summarized under the new concept of *quality literacy*. The concept is based on the assumption that quality in education is the result of competent behavior of stakeholders involved in an attempt to develop quality. The scientific approach which is used to derive the concept of quality literacy builds on the concept of Total Quality Management as described by Horine and Lindgren (1995) and applies the concept of Media Literacy as formulated by Baacke (1996) to the field of quality development. This application is done on the theoretical basis of the concept of action competence relating to elaborations of Weinert (1999) and van der Blij (2002) and also taking into account the connection between knowledge, skills, and competence according to North (1998, 2005). In this section we describe the theoretical background of the concept and the methodology which has been used to construct the concept of quality literacy. We define a set of skills which are necessary to perform quality development processes. The concept is embedded in the view that quality has to be defined in a participatory way (see Sect. 5.2).

### 5.5.1 *Theoretical Background and Approach of a New Concept*

Quality literacy is a concept which is much related to the philosophy of total quality management. Within this approach, quality is seen as a continuous improvement process, involving all stakeholders in the process of a permanent assessment and quality improvement (cf. Horine/Lindgren 1995). For this aim one element is of key importance—the introduction and development of a quality culture into an organization. This has two dimensions (Fig. 5.2): First, a managerial dimension which is of rather technocratic nature and deals with implementing tools and instruments to measure, evaluate, enhance, and assure quality. This is usually facilitated though a top-down process. Secondly, a dimension of *quality commitment* focuses on an individual level. It relates to the individual commitment to strive for quality, using tools and instruments for quality development but first and foremost it also focuses on changing attitudes, values, and developing new skills and competencies in order to make a permanent improvement of quality possible. Individual abilities, attitudes, and values add up to a collective level which in turn leads to a quality competent organization. This dimension relates to a bottom-up process (see Fig. 5.2).

The ability which enables an individual to competently use, modify, and further develop existing tools, instruments, and strategies, or to introduce them or develop them new, in order to pursue a permanent quality orientation in an educational setting shall be called *quality literacy*. *Quality literacy* is not a free-floating concept but can be rooted in and connected to many already long existing theories and approaches. We derive the term originally from the concept of *media literacy* as it was formulated by Baacke (1996). Baacke suggested conceptualizing media literacy as ability with four dimensions: media knowledge, media critics, media usage, and media design (ibid.). As a concept, *media literacy* describes the abilities which individuals need to act competent in a world mediated through media. From a methodological point of view, we are transferring the four dimensions of media literacy and reformulate them for the specific application in the field of quality development. *Quality literacy* thus describes the abilities which individuals need to act competent in quality development processes. The use of a conceptual transfer methodology from one to another field demands for clear definition of the relating concepts and a comprehensive description of the fields it applies to.

In an organizational context, quality literacy is a set of skills which enables individuals to take part in the development of a quality culture. For individual learners, the same set of skills enables them to pursue permanent improvement processes of their own learning and development processes, using quality instruments and concepts. Quality literacy thus applies to both sides—actors on the side of providers of educational processes, like teachers, tutors media designers or administrative staff, and actors on the clients' side of educational processes like learners. It is a set of generic skills which applies to both different contexts and has to be adapted to the specific situation.



Fig. 5.2 Quality culture (based on EUA 2006)

The concept is comprehensively introduced in this article for the first time. It is based on the belief that quality improvement is the result of (quality) competent action of individuals. It is of complementary nature to external organizational quality strategies which are seen as an important but not sufficient component for achieving high quality in education. Quality literacy is manifesting itself in the ability of actors of an organization or of an individual learner to use quality strategies and tools and incorporate the changed and new beliefs and values they inherently carry into their everyday professional behavior and procedures. Only then educational quality development will be successful.

A set of individual competencies necessary for this purpose can be described and are captured in the concept of quality literacy. Although the concept is fairly new, it has counterparts in other areas which follow a similar pattern. For the field of organizational learning, for example, Peter Senge (1990) described a set of five competencies which he introduces as important for all forms of organizational learning. He stresses that not only external strategies, procedures, and rules have to be implemented into organization change processes but that the actors have to take on new ways of thinking and acting and thus have to become competent facilitators of change.

The concept is entitled quality "literacy" because it does not only relate to *knowledge* about quality but goes beyond this, towards the concept of *competencies*. It goes back to the theoretical approach of *action competence* which is defined as the ability of self-organization in a specific educational or professional context (Weinert 1999). One important assumption in this model is that competencies can be learnt and developed through practical activity. The necessity of an active, self-organized learning process is stressed, and competencies cannot be taught through a purely instructional approach. Van der Blij (2002) stresses the importance of *knowledge, skills and attitudes* for competencies: "Competence is defined as the ability to act within a given context in a responsible and adequate way, while integrating complex knowledge, skills and attitudes." Wildt

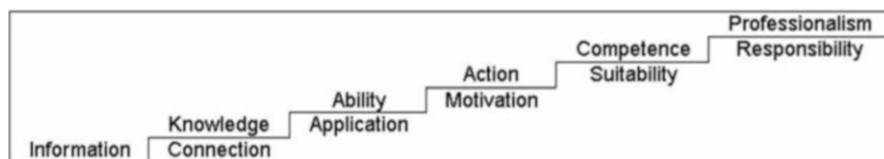


Fig. 5.3 Steps to professional competence (adapted from Wildt 2006)

(2006) adapts the concept of Competence Steps of North (1998, 2005) to show the link between knowledge, skills, competence, and professionalism (see Fig. 5.3).

Quality Literacy in this sense is seen as a basic prerequisite to act professionally in quality development contexts. In the first step, information about quality and quality development or related fields are connected with each other to knowledge and on the second step they are applied and result in abilities. This is the step where individuals make practical experiences with applying or using quality strategies, tools, or instruments. These abilities are transformed in activity through motivation and will. Competence, however, demands for an additional evaluation about whether the performed activity is suitable in a given context. For this, an individual usually needs standards against which one can assess whether something is suitable in a specific context. For quality development these can be societal norms, legal rules, criteria which are agreed on in the specific organizational context or set of standards for individual behavior. Wildt (2006) extends North's concept by including the step *professionalism* which relates to the responsibility towards clients and society. Quality literacy therefore is more than knowledge or abilities.

In general it has to be noted that quality literacy applies to all forms of knowledge, information and learning technology-related educational concepts, like technology-enhanced learning and blended learning—as well as presence courses. There are commonalities and differences between “traditional” educational scenarios and e-learning. Concerning quality development however we have to note that it is a process of negotiation with the goal of providing successful education in both educational fields. For technology-enhanced learning we additionally have to deal with the specific field of technology. Of course additional areas of knowledge apply here—in principle, however, quality development requires the same competencies.

In conclusion we can state that the concept of quality literacy builds on existing concepts and aims at describing skills which enable individuals to perform quality development competently. Sometimes these situations are very complex, e.g., when it comes to restructuring whole organizational processes. Sometimes, though, there is only little complexity when only one specific quality instrument is applied to perform quality assurance, e.g., a questionnaire at the end of a program or course. Quality literacy, moreover, is a concept which cannot exclusively be learnt by means of books or trainings but requires experience and practice. It is a concept which is subject to constant change, as the means and forms of technology-enhanced education change as well.

### 5.5.2 The Four Dimensions of Quality Literacy

Quality literacy (Fig. 5.4) can be seen as a set of four central competencies which contribute to carrying out successful quality development in education. They do not constitute distinct factors of quality literacy, but rather differentiate the inner structure of the concept of quality literacy. A more precise description of the inner structure and coverage of the concept is presented: it elaborates the four dimensions the concept contains.

#### 1. Dimension: Quality Knowledge

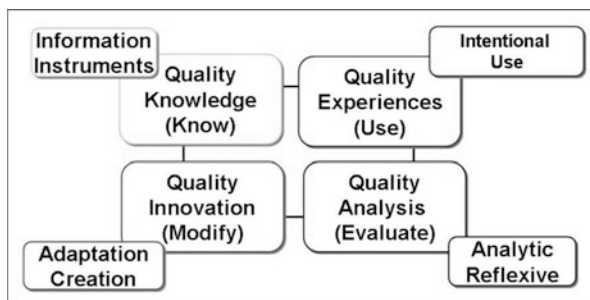
This dimension addresses the “pure” knowledge about the possibilities of today’s quality development and up-to-date quality strategies in technology-enhanced learning and education. The term *quality strategies* refers to all guidelines, structures, rules, tools, checklists, or other measures which have the goal of enhancing the quality of an e-learning scenario. There are two subdimensions to quality knowledge: an informational and an instrumental—they go back to Ryle’s (1949) classification of “knowing that” and “knowing how.”

- (a) Informative: The informational dimension refers to information and knowledge about quality systems, tools, and procedures. It is about having access to information resources, primary as well as secondary, and understanding the system of quality development. Typical examples of this are questions like: What is a quality approach? What is evaluation, quality management, quality assurance, quality development?
- (b) Instrumental: The instrumental dimension refers to the knowledge of how to use and apply a certain specific tool, e.g., an evaluation questionnaire, or how to use a list of criteria or guidelines for a specific context. It answers questions like: How can an evaluation questionnaire be applied in an educational context, e.g., a classroom? How can a set of benchmarks be used to assess my system against another one? It does however *not* relate to the competence of implementing a quality system with a certain *intention*, e.g., to reduce the drop-out rate of a course—this is covered through the dimension of quality experience.

#### 2. Dimension: Quality Experience

This dimension describes the ability of using quality strategies with a certain intention. It is based on the experiences which actors have with quality development and with applying quality measures and strategies to educational scenarios. It can be differentiated from the *instrumental knowledge* dimension because it refers not only to the pure application of quality strategies or tools but also covers the feedback analysis and initiating improvement processes. That means that in addition to the instrumental knowledge of quality strategies, this dimension also carries an *intention* and a *goal* with it. *Quality experience* refers to the

**Fig. 5.4** Dimensions of quality literacy (QL)



ability of using (existing) quality strategies (e.g., guidance and consulting concepts) to generate data about educational processes in order to improve them. It answers questions like: How can I use quality strategies in a certain way to improve the educational process? (see Fig. 5.4)

### 3. Dimension: Quality Innovation

This dimension relates to the ability which goes beyond the simple use of existing instruments and strategies. It refers to the modification, creation, and development of quality strategies and/or instruments for one's own purpose. An innovative and creative aspect is important for this dimension: *Adaptation and creativity* are here understood as further development and reorganization of existing quality strategies within a given context, *innovation* means here thinking up and developing new strategies for quality development.

1. **Adaptation:** This subdimension refers to the ability to adapt an existing quality strategy or tool to one's own context. It goes thus beyond the pure usage of an existing tool, needs deeper understanding of it, within the given methodological framework and demands for *creativity*. Typical questions are: How can a certain quality management concept be extended to a number of processes and categories in order to adapt it to the organizations specific needs?
2. **Creation/Innovation:** The *creation/innovation* dimension describes the ability to think beyond existing strategies and going further than just modifying them and describes the ability to invent a complete new quality system. Such self-developed systems are often used for organization internal purposes when existing approaches do not cover the specific goals and requirements. An example would be the development of a new evaluation questionnaire for the assessment of a course when existing tools fail to analyze the desired aspects. Also it could be the development of a new method of consultation with learners before a course starts in order to preassess their needs and goals.
3. **Dimension: Quality Analysis :** *Quality Analysis* relates to the ability to analyze the processes of quality development critically in the light of one's own experiences and to reflect upon one's own situation and context. It enables actors to evaluate different objectives of quality development and negotiate between different perspectives of stakeholders. To "analyze critically" means the ability of differentiation and reflection of existing

knowledge and experiences in the light of quality development challenges. For *learners* this would mean to be aware of the responsibility which they have for quality in education as a coproducer of learning success. For *providers* this means to enable flexible negotiation processes in the educational offerings and to respect individual objectives and preferences as well as societal contexts and organizational structures in their definition of quality objectives for education. Two subdimensions can be differentiated: an analytic and a reflexive one.

- (a) Analytic Quality Analysis: The *analytic dimension* covers the process of analytically examining the meaning and the debate of quality in education in general. It is the ability to move within the framework of the quality discourse, to contribute analysis, and to understand the different influences, starting from the market perspective, business models, taking into account technical aspects, and not forgetting the pedagogical aspects. Analytic quality analysis answers to the question: What is the state of the art of the quality discussion and what are important developments in the debate?
- (b) Reflexive Quality Analysis: The *reflexive dimension* is directed towards the analysis of one's own situation. It is the ability to set quality goals for one's own individual or organizational context and to position oneself in the quality debate. The reflexive dimension emphasizes the ability to understand future challenges in educational quality development, rethinking one's current quality situation, and developing a strategy to meet future challenges. A typical field of the reflexive quality analysis competence is the development of future goals, leitmotifs, and strategies either for oneself as the individual learner or for an organization.

Table 5.1 summarizes the different components of quality literacy and gives an overview of the questions which they relate to.



**Table 5.1** Overview of different components of quality

Quality literacy dimension	Questions/examples
Dimension 1: Quality knowledge	
Information	What is a quality approach? What is evaluation, quality management, quality assurance, quality development?
Instrumental/qualification	How can an evaluation questionnaire be applied in an educational context, e.g., a classroom? How can a benchmark be used to assess one system against another?
Dimension 2: Quality experience	
Intentional use	How can I use quality strategies in a certain way to improve the educational process?
Dimension 3: Quality innovation	
Adaptation	How can a certain quality management concept be extended to a number of processes and categories in order to adapt it to the organization's specific needs?
Creation/innovation	Create an evaluation questionnaire for the assessment of a course when existing tools fail to analyze the desired questions Create a new method to consult with learners before a course starts in order to assess their needs and goals
Dimension 4: Quality analysis	
Analytic quality analysis	What is the state of the art of the quality discussion and what are important developments in the debate?
Reflexive quality analysis	Development of future goals and strategies for either oneself as an individual learner or as an organization

## Chapter 6

# The Practice of Quality Development: Tools and Concepts for Quality of Open-Learning Cultures

Sometimes it might seem paradoxical to talk about the quality development for open-learning cultures, as we find that these cultures are frequently dominated by disruptive, autonomous, and seemingly non-planable processes on the one hand side and quality development is often understood as *checking* and controlling through externally imposed standards on the other hand. However, quality can also be understood in a development-oriented way, which means enabling learners to develop themselves in their own learning processes and consequently produce better results as far as quality is concerned. In this view, methods of self-evaluation, reflection, and peer evaluation are seen as more important. This kind of quality methodology does not have anything to do with normative, universally valid standards, but aims at improving the quality of the learning processes.

Taking a look at the relevant literature on quality in the educational sector, it quickly becomes clear that quality can definitely be more than a “check by means of standards”: Harvey and Green view not *one* but *five* basically different pedagogical ways of understanding quality at work in the educational sector. They conclude that quality is a philosophical term (Harvey and Green 2000: 36).<sup>1</sup> Similarly, Posch and Altrichter point at quality being a relative term which has to be more closely defined with regard to the values of different pressure groups (Posch and Altrichter 1997: 28). It follows that they talk about quality as a relative term, which has to be organized as a negotiation process in the relation between stakeholders (ibid,

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<sup>1</sup>First of all, Harvey and Green call quality an exception (1). That means quality itself is an exception in that it goes beyond the highest standards or reaches at least prescribed minimal standards. In contrast, quality can be interpreted as (2) perfection or consistency. This approach focuses on processes which can be achieved when striving for quality and expresses itself in lack of errors as well as effectiveness and efficiency. Different than the two first approaches, (3) refers to quality as purposeful, which means that it related to the underlying purpose of a product or service. A fourth approach (4) then focuses on the relation between quality and market/price: the adequate countervalue. Finally, quality is understood as being transformative (5). This understanding focuses mainly on services and generally questions product-oriented quality assessment in the educational sector.

similarly also: Harvey and Green 2000: 17). Heid emphasizes that quality is not a characteristic of an educational process that can be observed generally. Rather, it is the result of an assessment. Quality in education can thus not be understood as an overall classification of good schools, programs, or learning scenarios, but needs to be seen as a result of clear negotiation processes of value systems, requirements, and results (cf. also Ditton 2000: 73). Posch and Altrichter (1997: 130) conclude that it is impossible to achieve more than clearly defining the criteria which every stakeholder uses in his quality assessments and take into consideration those competing points of view when making quality assessments.

For the quality of educational processes this means that it needs to be asked *which* stakeholders having *which* interests take part in the educational scenario in *which* way. In this regard, an obvious difference can be seen between the broadcasting-oriented understanding inherent in technology-enhanced learning 1.0 and the rather participation-oriented understanding predominant in technology-enhanced learning 2.0. E-learning 2.0 not only centers the learners as receivers but also as active actors which take part in the definition and evaluation of the learning resources' and processes' quality. While in technology-enhanced learning 1.0 learning material is more often than not compiled or designed, as well as assessed by experts and learning platforms are quality-assured by institutions and experts, in e-learning 2.0 learners compile their own Personal Learning Environments (PLE), create their own content and learn together with and from others. Learning material is simultaneously assessed through the peers.

In e-learning 2.0 learning scenarios, the learner has an important role as active constructor of learning materials (cocreator), PLEs and initiator of his or her own learning processes. Interestingly, this is a characteristic, which is often felt to be a barrier for integrating e-learning 2.0 into formal educational processes. This is because the competition of learners and teachers and/or other institutional actors during quality assessment seems to be insurmountable and only resolvable through a loss of power for the institution.

As the expert panels have shown, strong learner autonomy must be considered as a precondition as well as an objective for e-learning 2.0. In addition to that the rise of informal learning, which makes education not only take place in institutions, implies that learning, within the era of e-learning 2.0 and based on Peer Production, is increasingly connected and enmeshed with a learners' social life's, divided into numerous different episodes, and based on learning communities and social networks, using social software and individually compiled contents. Securing and developing quality in such learning scenarios thus has to focus mainly on the individual learning processes and the shown achievements respectively performance. In addition to that, expert panels as well as literature review has shown that the learner's perspective has become more important than the organizational processes and input factors. Quality assessment does therefore not any longer take place by means of classical methods of expert- and standard-based quality management, quality assurance or control, but by deploying increasingly participative and collaborative methods, based on responsive designs. Accordingly the aim of the process must be to increasingly achieve individualized forms of quality assessment,

**Table 6.1** Different conditions and objects of quality assessment (Ehlers 2008: 15–18)

	Traditional (e-) learning	Open-learning cultures
Quality is assessed by...	Experts	Learners and peers
Environment	Learning platform	Personal learning environment
Source of content	Content created by experts	User-created content
Directive and content	Curriculum	Learning diaries/e-portfolios
Organization	Structure of classes	Communication
Feedback and Communication	Availability of tutors	Interaction
Basis for Learning and Learning Materials	Multimedia (interactive)	Social networks and communities of practice
Type of Learning Process	Appropriation processes	Participation processes

which relate to, and supports the overall learning process and performance. Accounting for this notion, the most significant results of the shift from e-learning 1.0 to e-learning 2.0, influencing the design of quality development and assessment approaches have to be considered for (see Table 6.1).

Quality development for education and e-learning, which means evaluating learning contents and processes, certifying and accrediting programs and institutions, is becoming more and more important. *Quality management* means defining comprehensive organizational processes within an educational institution and agreeing on indicators for their goodness. *Quality assurance* examines whether a promised level of quality can actually be kept. *Quality control* is supposed to detect mistakes and prevent them. What, however, happens in learning scenarios in which e-learning 2.0 is involved? In cases in which learning material is largely developed by students, learning processes are highly diverse and not unified and learners find their own way of learning? And what about those education processes which happen outside of the programs and formal educational institutions? Who determines the quality of such learning scenarios, what can then be assessed at all, and which methods can be used to improve quality?

The sections before have shown that strong learner autonomy is pre-condition as well as objective for e-learning 2.0. Learners are highly self-directed, as learning does not only take place in institutions, but everywhere, during the course of one's whole life in a number of different episodes, in learning communities and social networks, using *social software* and individually compiled content. Securing and developing quality in such learning scenarios thus has to focus mainly on the *individual learning processes* and the *shown achievements* (performance). The learner's perspective is more important than the organizational processes and/or the so-called input factors. Quality assessment does not take place by using classical methods of expert- and standards-based quality management, quality assurance or control, but by making use of more participative methods and responsive designs. The aim of the process is to reach an individualized assessment, which relates to the learning process. Table 6.1 shows the different subjects to which quality assurance for e-learning 2.0 relates.

**Fig. 6.1** Perspectives on the quality discussion in context of technology-enhanced learning



The perception of “quality as transformation,” which Ehlers et al. (2005) equate with the objective to achieve “the best learning achievements,” is the most prevalent perception of quality for e-learning. Among technology-enhanced learning experts and practitioners, quality has quite different meanings to the majority of learners and technology-enhanced learning providers (Ehlers et al. 2005). Consequently and analogue to the perception of quality within the general field of education, quality in technology-enhanced learning “comes in many forms [...], has a range of foci” (Deepwell 2007: 34) and it cannot possibly be defined without constraining, limiting, or neglecting the perception of at least one of the many “quality cultures,” that represent the vision, interests, and priorities of its various stakeholders; e.g., industry, academia, professionals, or students. Facing this circumstance it becomes apparent that the analysis and discussion of quality in technology-enhanced learning benefits substantially from distinguishing between two perspectives (see Fig. 6.1).

The first perspective refers to the quality of educational opportunities which can be achieved and improved through EL, regarding the potential enhancements in quality by means of, i.e., blended learning extensions. The second connotation considers the quality for EL, which is concerned with the quality of and within products and processes as well as methods and instruments of EL itself (Ehlers et al. 2005). According to the objective of this chapter, the focus within this work will be on the latter of the two connotations and will therefore be based the connotation of *Quality for e-learning*.

## 6.1 Factors to Consider for Quality Development in Open-Learning Cultures

When facing the challenges of quality assessment for e-learning 2.0 scenarios, it is fundamental to pay attention to changes which occur due to the context in which such scenarios take place.

### ***6.1.1 Factor 1: What Is the Object of Quality Development for Open-Learning Cultures?***

For open-learning cultures it is first necessary and worthwhile to define the object of quality development—the trajectory for which quality can be developed or assessed, and how it is changing from traditional to open-learning cultures.

1. Peers, their activities, their interaction and communication/participation: In general, the behaviors of peers, (such as students and potential students), the community, and other producers of the learning material are considered to be more important than knowledge reproduction. In particular, processes of communication and social interaction, such as those within social networks are regarded as crucial to the process of quality assessment. Therefore the organization of communication processes is important.
2. Organization of learning process: The process of learning, communication, and interaction is generally regarded to be more significant than reaching predefined learning goals. The process of learning, the planning and control of activities and the consideration of evaluation against coordination, and systematization of spontaneous knowledge building by providing an adequate methodology for assessment are considered to be of crucial importance. Furthermore, the process of building consensus in respect of awareness, trust, cohesion, participation, and criteria to achieve a consensus is deemed to be highly significant.
3. Structure of content, achievements/outcomes, and consensus building: As far as the results and outcomes of quality assessment are concerned, the standardization and typology of content entities and possibilities to record and tag these is regarded to be central in terms of effectively organizing, measuring, and filtering knowledge. Besides, the need to adequately assess the achievement of the proposed objectives, the usefulness and suitability of content, and the level of user satisfaction necessitate the utilization and development of measuring instruments.

Table 6.1 above below gives a summary of the different objects of quality assessment traditional and open-learning cultures.

### ***6.1.2 Factor 2: Taking a Holistic Approach to Develop Quality of Learning Cultures***

1. Institutional and organizational aspects: Regarding the dimensions of peer production, the peer group's (in other words the final user's) adaption to and satisfaction with the process and results is considered to be pivotal. When facing this challenge it is essential to increase the level of motivation and recognition within the group and every individual in it. This includes enabling the peer production group to foster the personal growth, development, and social

integration of its individuals and their learning capabilities. Therefore this dimension of peer production relies, to a great extent, on the peer groups' work ethics in regards to exploiting, assessing, and expanding the social abilities and potentials of each individual within the group.

2. Economic, cultural, and pedagogical aspects: Since the social networks are a continuously growing means for learning and the production and obtainment of knowledge, the social system surrounding a group and its peers is regarded as a key dimension of peer production. This leads to the conclusion that the characteristics of peers, the actual area of learning (vocational/professional/educational), and the specifications of the environment (open/closed), on which it is based, have to be taken into account and clearly defined.
3. Content: Regarding content of peer production, it is of crucial importance that the way the content was created or composed is transparent to the peers within the group. Furthermore the content must be up to date (adequately updated within an appropriate refresh period) in order to provide satisfactory results for the group and its users. Likewise the accuracy of content has to be assured at all times.
4. Technological aspects: Considering the dimensions of peer production, the correct and appropriate deployment and combination of tools and instruments is a crucial factor within learning 2.0 approaches. The panels' experts point out that the peers' expertise and competence in employing ICTs might often be opposed to their strength concerning the field of knowledge in demand. Furthermore, the above-mentioned impact of social networks and the need to exploit these, demand peers to be even more capable of coping with ICT.

### ***6.1.3 Factor 3: Methods and Instruments for Quality Assessment***

1. Methods and instruments of self-assessment: In general, quality development in Web 2.0 scenarios demands that learners are empowered to assess and evaluate their own learning and production. To support this assessment, organizations are urged to provide a system and structure of indicators based on tools, guidelines, and decision factors in order to help learners to develop a competence in evaluating their own and others' progress and results.
2. Peer reviews, external assessment, and collaborative dialogue: The need to assist learners to assess the quality of learning results, by means of software, guidelines, and policies of course holds true for the mutual evaluation of learning outcomes, too. Even though it is agreed that that in Web 2.0 scenarios "crowds" often hold more wisdom than a single expert, and that this wisdom needs to be exploited, the development of a consensus is considered to be crucial. Therefore methods such as polls, surveys, and questionnaires are seen as essential. As far as the choice of peers for evaluation and examination of material produced by other

peers is concerned, spontaneity, voluntary, or random selection, as well as the selection of reference groups is regarded to be feasible under certain circumstances. Facing the fact that stakeholders not only develop but also assess their own material, nevertheless points towards considering a periodical evaluation by (external) experts in order to ensure and improve the conclusiveness and correctness of outcomes and processes. Dangers including common knowledge effects, hidden profiles, group polarization, or other phenomena must be avoided, as they have high potential for amplifying errors due to failures of group judgment, information aggregation, or consensus building.

3. Challenges and problems concerning the assessment of quality: The key challenge concerning evaluating learning processes and results within web 2.0 scenarios cannot be assessed from predefined standards and measures. This leads to measurements of quality assessment that are understandably not always compatible with institutional guidelines and regulations. This is because the quality of peer production naturally depends on the competence and qualification of its peers. Accordingly if the quality assessment is not performed by experts but by the peers themselves, it can potentially generate so called “garbage-in—garbage-out” problems.

### **6.1.4 Factor 4: The Stakeholders**

Most experts view the stakeholders in peer production to be “everybody who is participating in the process of learning, evaluation, and content and knowledge creation.” This includes all sorts of peers, participants, and members of involved communities and organizations such as students, potential students and also external analysts, mentors, and experts. Nevertheless the perception that there is no longer any separation between teachers and learners, because all participants are stakeholders of the same learning environment, is not shared by all experts. As a result, some experts perceived a need to distinguish between teachers’ and learners’ peer production.

### **6.1.5 Factor 5: Coevaluation and Codesign of Quality Development**

For quality assessment of learning 2.0 scenarios peers play a fundamental role to give feedback, engage into mutual reflection, and peer reviews. Often these processes happen not in a summative way, like in e-learning 1.0 approaches but in formative ways in which the peers giving feedback are also involved into the creation of content or into the learning community. Systematically this means that the ones who are evaluating are the ones who are creating. From a scientific



point of view this can lead to a biased view or judgment through one's own involvement. In learning 2.0 scenarios however, this is necessary. Learners become creators and creators become learners. Roles distinctions are fluid and role changes become normal.

Therefore the peer learner often is asked to be the evaluator. Evaluation and feedback, counseling and guidance are all part of quality development as they form integral parts of validation. To provide validation to one another becomes an important competence for learners in the learning 2.0 scenario. Learning competence includes evaluation and feedback competence in a networked learning environment. The judgment bias can only be overcome if learners are explicitly making apparent the judgment and evaluation criteria and their own measures which they are basing their judgment on. Peer communities must agree on a set of parameters and criteria which they want to use for their evaluation and judgment of quality and feedback. These agreements should be autoevaluated by the community and adapted. Evaluation thus becomes an integral part of learning and learning an integral part of evaluation and assessment. Attwell (2004) is referring to this as a shift from assessment of learning over assessment for learning and assessment as learning.

## **6.2 From Theory to Practice: Shifting the Focus**

The role, the objects, the methods, and the perspectives of quality development are changing. While in traditional learning scenarios it is often based on checking and controlling of quality, in learning 2.0 scenarios it is changing towards being an enabling peer process to support learning progress. Concluding, the methods of learning and quality development are moving closer together and become an integral part of one another. Feedback, reflection, and recommendation processes are becoming increasingly important. The main shifts and challenges can be subsumed in accordance with Ehlers (2008: 15–18) in the following guideline of questions to consider when building your own quality approach.

### **6.2.1 Worksheet**

*We challenge you to go through each individual point, reflect on your own situation, and insert a description of the main points into the worksheet below.*

From reception to participation: the metaphor used for learning is changing. In e-learning 2.0, quality cannot be tied to the evaluation of a predetermined learning environment or learning contents produced by an expert. Not the reception but the active participation is most important, that means the question in how far a learning scenario stimulates the creation of individual personal learning environments, the compilation of individual learning contents, and sharing them with others.

**Action Point**

As the metaphor for learning is changing from reception to participation, discuss in the following what does that imply for the quality approach in peer production of e-learning and what measures must be planned for and implemented to take advantage in this metaphor change.

*Please use a separate piece of paper to fill in your results*

From inspection to reflection: quality development for e-learning 2.0 shifts the focus from conformity to a reflection of the learning process. Learners are supported in reflecting, recognizing, and putting into effect their own learning progress, educational strategies, needs, etc., and in the course of their actions critically reflect the contribution of educational media. The aim is to achieve a personally ideal configuration of educational media and strategies, which is continuously developed through autonomous reflection.

**Action Point**

Another important shift is the quality development alteration towards learning from the reflection of the learning process. Discuss in the following what measures must be planned for and implemented to take advantage in this change.

*Please use a separate piece of paper to fill in your results*

From product orientation through process orientation to performance and competence orientation: the material that is used for learning and the processes of its supplier are not the focus of quality development. Quality development focuses on

the learners' performance, their individually developed learning products, steps in development, and similar aspects (for example in e-portfolios), which shape their way to decision-making and responsibility.

*Please use a separate piece of paper to fill in your results*

### **Action Point**

The focus of quality development is shifting from “product orientation” towards “performance and competence orientation.” Discuss in the following what consequences this change has in the quality approach of your organization as well as in the quality approach of peer production in e-learning.

*Please use a separate piece of paper to fill in your results*

From planning education for the learner to planning education by the learner: quality of learning scenarios is often attempted to be achieved through careful analysis of the need for education, a comprehensive conception phase, feedback as far as the design of learning material and development processes are concerned, and the evaluation of learning processes. In e-learning 2.0, many of these processes shift from the supplier of a program to the learner. Quality concepts must therefore support the learners in their ability to develop quality through reflection, enable learner-oriented forms of evaluation, and offer the necessary tools for quality development to the learners in their PLEs.

**Action Point**

As stated previously, in e-learning 2.0 many key processes shift from the supplier of a program to the learner. Also the quality approach must therefore support the learners in their ability to develop quality through reflection. Discuss in the following what consequences this change has in the quality approach of your organization as well as in the quality approach of peer production in e-learning.

*Please use a separate piece of paper to fill in your results*

From receiver to developer of learning materials: quality assessment in e-learning 2.0 scenarios does not follow the logic of a marketing effectiveness research to find out how the materials and characteristics of media optimally affect the learning process. It is not about learning process taking part in a unified learning scenario. Rather, the focus lies on processes of development, flexible usage, and the validation of social communication processes with other learners.

**Action Point**

In e-learning 2.0 the emphasis is on learners as key developers of learning materials. This sets also new requirements for the quality approach of organizations. Discuss in the following what consequences this change has in the quality approach of your organization as well as in the quality approach of peer production in e-learning.

*Please use a separate piece of paper to fill in your results*

From the “learning island” LMS to the Internet as a learning environment: e-learning 2.0 approach understand Learning Management Systems (LMS) as a

mere starting point, as a signpost for their own search and use of material from the internet, their development and linking to other tools which can be flexibly arranged to become personal learning portals. Quality assessment then does not focus on materials from the LMS anymore but rather on the learning products and perhaps on the learning processes documented in an e-portfolio.

### Action Point

In e-learning 2.0 the emphasis is also moving from internal, proprietary learning management systems, and “learning material reservoirs” towards the Internet as a learning environment. Discuss in the following what consequences this change has in the quality approach of your organization as well as in the quality approach of peer production in e-learning.

*Please use a separate piece of paper to fill in your results*

From artificial tests to real performance: learning progress, achievements, and competences become visible not only in tests but rather in the learning process documented in portfolios (for example in wikis or web logs), learning products, and social interactions.

### Action Point

In e-learning 2.0, learning progress and achievements become more visible and the assessment of learning shifts from tests to wider assessment of performance. Discuss in the following what consequences this change has in the quality approach of your organization as well as in the quality approach of peer production in e-learning.

*Please use a separate piece of paper to fill in your results*

Further on it is to be highlighted that all experts agree on the fact that Quality Management of Peer Production of technology-enhanced learning is a complex and

multilayered endeavor that requires peers, peer communities, and supporting external actors, as well as the social, environmental, and technological surroundings to meet numerous different qualifications and preconditions in order to grow up to its full potential. The fact that the participating peers and experts are not divided into groups of teachers/contributor and learners/users not only leads to diverse constitutions of peer groups but also demands learners to organize, motivate, and evaluate themselves, other peers, and the developed results of production. In order to support the peers in the process of doing so, supportive concepts, methods, and tools need to account for their often highly diverse qualifications, expertise, and previous knowledge. This is regarded as an essential element and a major challenge for the organization, comprehensiveness, and level of detail of supporting structures, such as models, tools, rules, guidelines, policies, and other specifications. Thus the fact that the majority of young collaborators might be well-versed in utilizing ICTs could potentially conceal their absence of social skills or competence, while the contrary might be the case for some very experienced experts in specific fields of knowledge. In this context, the accentuation of transparent and comprehensible learning and production processes rather than focusing on outcomes or products of learning becomes even more evident. In this regard the QMPP approach, presented within the expert panels is highly valued and appreciated even though measures of adjustment and refinement considering the learners' individual strength and weaknesses are strongly advised. Considering the upcoming challenges for Quality Management of Technology-enhanced learning and Peer Production, such as achieving balance between creativity and rules as well as the empowerment of learners, it is considered to be fundamental to account for the context, fields, and subjects of the respective learning scenarios in order to provide the most appropriate ways of support, assistance, and encouragement of learners and to accomplish sound development and assessment of quality.

Besides it is a widely accepted fact the provision of clearly documented and well-defined assessment generally improves the quality of learning. (Jackson et al. 2006: 25). Facing the given shift within technology-enhanced learning subsumed under the umbrella term e-learning 2.0 and triggered by the rise of Web 2.0, informal learning and peer production, educational and corporate institutions are challenged to rethink existing approaches of assessment and evaluation in order to measure the quality of learning products, processes, and the effectiveness of learning in general. Regarding the purpose of assessment in this context it is essential to understand that assessment cannot only serve as a tool for expressing and certifying the knowledge and competences of learners by means of testing, observing, and analyzing their results and progress but also enables the comparison and communication of knowledge and competences with regards to enabling learners to gain insight into their own learning process and understand the meaning and quality of their attained knowledge and competences. Further on different forms of assessing and measuring quality demand different conditions and parameters or more precisely, abilities, skills, and assets of the assessments' consumers, such as teachers, students, and externals, to be in place, in order to successfully understand instructions, perform assignments, and finally interpret and

evaluate results. And as learners and teachers undoubtedly differ significantly in terms of qualification, it is vital to understand the specifics and characteristics of all forms of assessment in order to avoid missing the most intrinsic objective of assessment, enhancing the quality of learning.

### **6.3 Principles for Quality Development of Open-Learning Cultures**

The first principle refers to the customer focus and indicates the dependence of organizations or institutions on their customers and should “understand current and future customer needs, meet customer requirements, and strive to exceed customer expectations.” In the context of e-learning 2.0 the quality evaluation accrues through the cooperation of learners and peers (Ehlers 2008) for each other. Hence, in the general sense the “customer focus” results from the basic requirement to put the technology-enhanced learning environment into the context of the specific stakeholder group, to their interests, and to their role in the learning context. As Ehlers (2008) mentions, e-learning 2.0 mainly concerns the perspective of the learners than the organizational processes and input factors.

The second principle integrates the aspect of leadership, including the need to establish unity of purpose which forms the basis of a quality management environment. There is a high motivation and shared understanding for the goals and objectives of the community to develop a high degree of quality output (ISO 2009). This can be achieved through the impact of the unified environment of learning networks and communities. In e-learning 2.0 scenarios learners construct their personal learning environment (PLE), create its content, and learn from each other. Hence, there is a strong autonomy which the producers and at the same time the consumers of the final output maintain (Ehlers 2008).

The next principle underlines the direct involvement of people at all levels, since the knowledge of the individual will have a direct impact on the knowledge basis of the whole organization. This is achieved when people become accountable for their own performance and have a reason to make contributions towards a continual improvement (ISO 2009). In Technology enhanced learning the trigger for quality and improvement is involvement and participation of learners and interaction and communication (Ehlers 2008).

Fourthly, it is required to imply a process approach, which means that desired results in terms of quality achievement are considered in their subparts, which need to be managed. This contributes to a higher degree of transparency, which in the context of technology-enhanced learning is a key requirement, in order to assure a well-defined quality management process. It leads to a decrease in costs through the improvement of learning curves and a more effective use of resources (ISO 2009). In the context of e-learning 2.0, this process approach is achieved through the move

from the approach of education planning for the learners to the approach of education planning by the learner himself. Through the integration of methods like feedback, reflection, and recommendation the quality processes transfers to the perspective of the learners (Ehlers 2008).

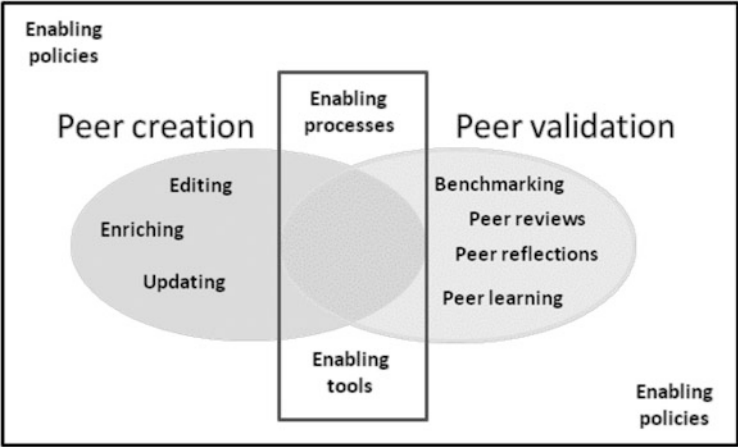
The fifth principle mentions the system approach to management, through which interrelated processes and systems can be identified and clarified. It can be argued that the process approach suggests providing “confidence to interested parties as to the consistency, effectiveness, and efficiency of the organization” (ISO 2009).

**Principle six covers the basic philosophy of continual improvement**, which should be the underlying purpose of each organization and institution. This implies that for technology-enhanced learning 2.0, the actual learning process needs to be understood development oriented. It includes the enabling of community members to develop within the learning process in order to achieve results of improved quality (Ehlers 2008).

The seventh aspect includes the factual approach which refers to the notion that decisions need to make based on facts. Hence, it strives for the achievement of the maximum degree of objectivity in outputs and information creation. This aspect shows ambiguous traits making the link to technology-enhanced learning 2.0. On the one hand, current research argues that quality or quality development in itself needs to be understood to have a relative nature. It is a result of a specific evaluation, which is rooted in individual and subjective assessment. On the other hand there are two important “laws” of quality that concern the final creation of objectivity and the factual approach. According to Linus’s Law, the number of people contributing to a project testifies and establishes the degree of the project’s quality and therefore the “ultimate truth.” This law is based on two key aspects. (1) Developers are preselected and if not the required competence to understand the often complex code under examination represents a hidden, indirect qualification process—containing the limits of the unskilled. (2) Software development relies rather on peer production than on peer reviews because every developer has to review and self-assess his own production in order to pass the first nonhuman instance of quality assurance. The second law is called Graham’s Law “The method of ensuring quality” in peer production is “Darwinian [...] People just produce whatever they want; the good stuff spreads, and the bad gets ignored” (Graham 2005). Both laws assume that the more contributors there are for a learning environment and the more qualified they are, the better will be the final output or quality of the learning process due to a shared understanding, interest, and background.

The final factor integrates the business-related principle of beneficial supplier relationships which is based on the interdependency of organizations and suppliers enhancing the potential value creation. This can be transferred to the setting of e-learning 2.0 since there is also the shift to be recognized considering the shift of role of the community members from recipients towards developers of learning material and quality.





**Fig. 6.2** The Learning 2.0 Qualityscape (Based on the QMPP Quality Scope which has been developed within the European project QMPP)

The fundamental finding in our work on quality of peer production is that quality is created as interplay between peer production of digital content and peer validation processes. Naturally peers have different roles at different times—they can participate in the quality process as creators, but their role is essential also as validators (see Fig. 6.2)

In peer creation there are different modes of work, which actualize on different times. The creation work can include authoring the content (such as making a new article or video), editing of the digital content (such as proof-reading), enriching the digital content (such as adding new information or new media), or updating the content (such as updating the existing content with contemporary data).

However, the key aspect in the quality management of peer production is the active and thorough peer validation work. The peer validation work can include benchmarking (comparing with other sources), peer reviews (systematically validating your content with other peers), peer reflection (reflecting the content with other peers), and peer learning (joint learning and mutual development through continuous assessment). In the following table (see Table 6.2) we have summarized some typical activities during in the peer creation—peer validation work.

Quality management of peer production of e-learning must also focus on providing enabling processes and enabling tools for those situations in which peer-created content shall be peer validated. The enabling policies for peer creation, peer validation, and quality management must thus support the entire process of Peer Creation and Peer Validation, by providing enabling tools and suggesting enabling processes.

**Table 6.2** Peer creation and peer validation

Peer creation (including peer authoring)	Creating digital learning content by authoring, editing, enriching, and updating using various media
Authoring	(Shared) authoring of texts and other digital resources; creating images, audio materials, video materials; creating content for wikis, etc.
Editing	(Shared) editing of digital content (from proof-reading to translation), creating alternative navigational routes, creating collages, etc.
Enriching	Creating additional digital content, publishing individual works and team works, sharing or learning (b)logs, adding library links, social bookmarking, etc.
Updating	Monitoring existing content, updating existing content, adding specific area content, etc.
Peer validation	Validating digital content with subject matter experts, validating content with peers, rating the validity and usability of the content, etc.
Benchmarking	Identifying of good cases and practices for comparative purposes, identifying of additional digital resources, identifying areas of lacking content, etc.
Peer reviews	Providing feedback by peers of learning goals, progress, and aims within a learning community
Peer reflection	Encouraging the reflection of learning processes by means of own experiences and sharing the reflections within the learning community or between different learning communities
Peer learning	Joint learning also by the exchange of learning experiences and learning outcomes, such as e-portfolios

6.4 MyQuality: Building Your Own Quality Approach

In this chapter we guide you in building a suitable quality approach to your organization to support the quality management for open-learning cultures. As you have worked with the previous chapters, you have already made a number of definitions and set up a number of guidelines. The first recommendable step is to assess your concurrent practices. The mapping of the existing situation provides you with an appropriate understanding of your practices, but it can also provide you with ideas to improve your work in the quality area.

Action Point

Use the following list to assess your concurrent practices. It has been formulated in order to give indication how peer production practice can become high quality peer production. Please go through the list and assess your own practice. You are encouraged to write into the right column if and how you have implemented the specific principle in your own practice.

## Principles for design

Principles	How is this principle implemented in your own practice?
<ol style="list-style-type: none"> <li>1. The peer production environment should be designed in a nonrestrictive way and should stimulate participants' creativity by giving suggestions rather than restrictive laws.</li> <li>2. Democratic design includes shared ownership of processes; focus on peer interaction, quality is then defined as the groups' quality consensus.</li> <li>3. Pedagogical design of learning environments should focus on openness and not limit the peer group up front; it should be participatory and strive for peer-agreement on objectives, methodologies (at the beginning).</li> <li>4. The design process should focus on consistency of each members level of input and positive interdependences between peers as well as complementarily of the role of peers</li> <li>5. It is important that a code of practice for democratic design is existing which underpins the changed objectives of quality evaluation in peer-learning</li> <li>6. The educational design should be relevant to the professional context; the contents should be fresh and updated, should focus on a supportive context and relate to a real identified need.</li> <li>7. It needs a clear purpose and ideological support in term of culture for working together, culture of continuous learning, culture of acceptance of errors, continuous improvement</li> </ol>	

## Principles for the process/educational process

Principles	How is this principle implemented in your own practice?
<ol style="list-style-type: none"> <li>1. The educational process needs to focus on both quality and motivation (internal/external)</li> <li>2. It should allow low external determination and high internal reflection</li> <li>3. Reflection is of key importance for learning 2.0 processes.</li> <li>4. Learning process should be open; however, users should be accountable and registered in order to be able to validate the contributors</li> <li>5. The learning process should promote learners as active producers rather than passive consumer, should follow the path from reception to participation, and focus on interaction</li> </ol>	

Principles for technology

Principles	How is this principle implemented in your own practice?
1. Functional quality is important: coherence of used tools, technical support, user friendliness, testing and validating, accessibility, tutorials are available, traceability of production	
2. High contribution possibilities should be sidelined by highly accessible media	

Principles for organization

Principles	How is this principle implemented in your own practice?
Peer Learning has to be economic, concepts reusable, and an appropriate documentation should be available at all the stages	

Principles for outcomes

Principles	How is this principle implemented in your own practice?
1. Peer learning should be oriented to results.	
2. The learning should be based on established validation processes through the evaluation by peers, review committees for content, and a peer review needs to be in place.	

## Chapter 7

# Assessment for Open-Learning Cultures

There is no doubt about the importance of assessment. Assessment defines what students regard as important, how they spend their time, and how they come to see themselves as students and then as graduates. It is a major concern of those who learn, those who teach, and those who are responsible for the development and accreditation of courses. Assessment has been recognized as a driver of students' approaches to study in distance education no less than in campus-based settings. In those forms of distance education which integrate continuous assessment with course study, assessment is both a vital opportunity for student learning as well as a process of judging the performance of students and assigning grades. Experienced tutors who mark students' work are also teaching and motivating students, not merely grading them. The student experience is that through doing assignments they discover what they know and can do and also where their knowledge or abilities are weaker. The assignment task may stimulate them to revisit earlier study and motivate them to engage in depth with the subject matter of their course. It is not until students start to work on their assignment that they know whether or what they have learned from their studies.

It follows from this that we should give assessment no less attention than the design of teaching and learning environments, when we consider the effects of technology on distance education. These effects have been driven by the convergence of computing with telecommunications, in what has come to be called "third generation" distance education. Garrison links the term specifically to the technical characteristics of communications technology.

It is clear that assessing learning in Web 2.0 and in peer production-based environments can be tackled from various angles and by deploying a scope of known and well-established concepts from the fields of learning, psychology, and knowledge management as much as progressive techniques from topical information technology. Neither the presented methods and concepts nor the supporting techniques and applications do by any means provide an overview over the scope of possible ways in which quality development 2.0 can be approached. Methods based on "collaborative dialogue techniques," "bench learning," or the "most significant change approach" and applications as wikis, podcasts, and vidcasts are arguably

among the most relevant among those that were not discussed. Yet it was discerned by means of the provided scenarios and examples that each method can be supplemented and supported by the use of various applications and techniques of which many are an integral part of the emerging 2.0 culture. The analysis of the theoretical background as much as the exemplary outline of a possible application disclosed the strength and weaknesses in regard of the potential as an E-Assessment approach.

The explicit distinction between methods, instruments, and supporting techniques allows for further research on how a combination of the three can make an E-Assessment 2.0 approach more viable and meaningful. The following chapter will attempt to illustrate the “coalescence” of learning and quality development and assessment based on examining the shift from assessment of learning towards assessment for learning. One<sup>1</sup> of the key implications is the fact that learning and assessment must move closer together.

Regarding the meaning of assessment of learning from a traditional perspective, it has generally been connected with an understanding of measuring and judging students’ performance. This perspective, known as assessment of learning (AoL), has however changed dramatically over the last few years (Ehlers 2008; Stiggins 2008). Assessment is nowadays perceived to be an important factor and method within the learning process itself, conceptualized as assessment for learning (AfL), or as Toppings (1998: 254) refers to it “learning by assessing.” With regard to this understanding of assessment, Stiggins (2008) emphasizes that the assessment process and its results can (in an AfL sense) be turned into instructional interventions, which allow to “increase” rather than to just “monitor” a student’s learning, motivation, and confidence. This development substantiates and emphasizes the notion extracted from the analysis of the expert interviews that the role of quality development has to change from checking and controlling of quality towards a role as an enabler of learning progress within e-learning 2.0 and Peer Production. Accounting further on for the change from AoL towards AfL, it is argued that new forms of assessment practices need to be established, adjusted, and realigned for the purpose of increasingly involving students in the process and thereby supporting them to learn more effectively and efficiently (Roberts 2006: 2). In this regard the utilization of self- and peer assessment for the purpose of providing students with constant feedback and in order to enhance their learning process and assessment results is appreciated particularly (Seeger et al. 2003: 3). Quality assessment of e-learning 2.0 focuses on the learning process. There is no use of external standards and interindividual comparisons (such as tests or assessments). Rather, methods of self-evaluation, intraindividual development

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<sup>1</sup> OLD Intro: According to the outlined implications of the expert panels the assessment of quality within e-learning and in particular peer production within e-learning is confronted with a set of evolving new requirements. As this change however entails that the methods of learning and quality development are moving closer together, the assessment of learning is experiencing a change that is of fundamental importance and which will be examined within this chapter.

processes are employed for this purpose, which are not made via tests but via reflection and evaluation of learning products and e-learning. Even though e-learning 2.0 is a new development as a trend, substantial experiences have already been made with the learning models of *autonomous learning* and *learning in communities*, which are the basis for it, as well as with methods for quality assessment of learning processes. Teachers can use these methods in order to evaluate the learning progress together with students and to enable individual planning. The teacher takes on the role of a mentor who gives feedback and helps with reflection on the learning experiences or evaluates e-portfolio postings.

## 7.1 Revisiting Assessment of Learning Outcomes

The first question obviously is—what is the benefit of assessment in learning processes—for teachers and for learners? First: In general we can distinguish between a summative form of assessment and a formative form of assessment. “Summative” means to conduct a final assess at the end of a learning process, a course or a unit, assessing students overall achievements; “formative” refers to an ongoing assessment throughout a course. In this module on assessment we focus especially on formative assessment because research shows that this form of assessment is specifically powerful in helping students achieve high learning outcomes. In research there is evidence that formative assessment can raise standards of achievement. As presented above, the formative form of assessment, relates to an ongoing assessment throughout the whole course. There is nothing revolutionary about any of this. All teachers make assessments in every course they teach.

Black and William (2009) conducted an extensive “meta”-survey of the available research literature on assessment. They found confirming evidence that formative assessment raises standards and methods how to improve formative assessment practice. In doing so they checked through many books and through the past decade of issues of more than 160 journals and have studied earlier reviews of research. This process covered about 580 articles or chapters to study. They prepared a lengthy review, using material from 250 of these sources, that has been published in a special issue of the journal *Assessment in Education*, together with comments on their work by leading educational experts from Australia, Switzerland, Hong Kong, Lesotho, and the USA.

The aim of these modules is to become familiar with assessment as a topic for distance education. Work with the two resources given to understand what kind of assessment techniques exist and how they can be used.

Assessment of learning is difficult to define. Educational literature is full of different definitions of assessment and in the past, assessment techniques and methods have been undergoing major changes. Since the mid 1980s the assessment literature has been enriched with many new terms, e.g., performance

assessment, authentic assessment, direct assessment, constructive assessment, incidental assessment, informal assessment, balanced assessment, curriculum-embedded assessment, and curriculum-based assessment. However, the most important question is what, how, and why the need to assess? Assessment usually is a fundamental part of any curriculum and part of many phases of learning. Assessment is usually including some forms of measurement, feedback, reflection, and change. It helps learners and teachers to see how learning improves during the learning process. Assessment is often divided into three steps: (1) diagnostic assessment, (2) formative assessment, and (3) summative assessment. Diagnostic assessment concentrates on learner's qualifications, formative assessment on the learning process, and summative assessment on the learning outcome. "Learning outcomes [...] encompass a wide range of learner attributes and abilities, both cognitive and affective, which are a measure of how their college experiences have supported their development as individuals". According to,

- A cognitive outcome includes "demonstrable acquisition of specific knowledge and skills"; what do learners know that they didn't know before, and what can they do that they couldn't do before
- An affective outcome is related to attitudes, values, and beliefs that influence behavior and those cannot be directly measured

An excellent overview graph is provided by Korpinen (1976) to summarize different forms of assessment, as can be seen in Fig. 7.1. Assessment is not just the measurement of learning, and the purpose of assessment is not merely to gather information. Assessment is seen as a vehicle of improvement. It fosters learning, guide, encourage, and motivate learners. Analysis of the learning outcome enables rationalization of learning that helps the learner to learn, as well as, the development of education that helps teacher to instruct. Frequent assessment of a learner helps to refine the concepts and deepen their understanding; it also conveys high expectations, which further stimulate learning. Assessment includes two important processes:

1. Measurement, which includes gathering evidence or important information related to assessment, and
2. Evaluation, which refers to the decisions made on the basis of the measurement

An effective teacher gathers information from different sources, including conventional tests, homework, involvement on the class or in online, and authentic assessment, such as mind maps made during a brainstorm session, or crib sheets made for the final exam as an assignment. According to, "evaluation can be declarative, motivating, guiding, instructive, controlling, elective, or predictive." Traditionally a final teacher-made exam or standardized test has been the most used assessment method during higher education courses. However, list the following limitations of traditional assessment forms: traditional testing focuses on knowledge and recall of information, it provides little insight into the way learners think, and it does not assess a learners' ability to apply their



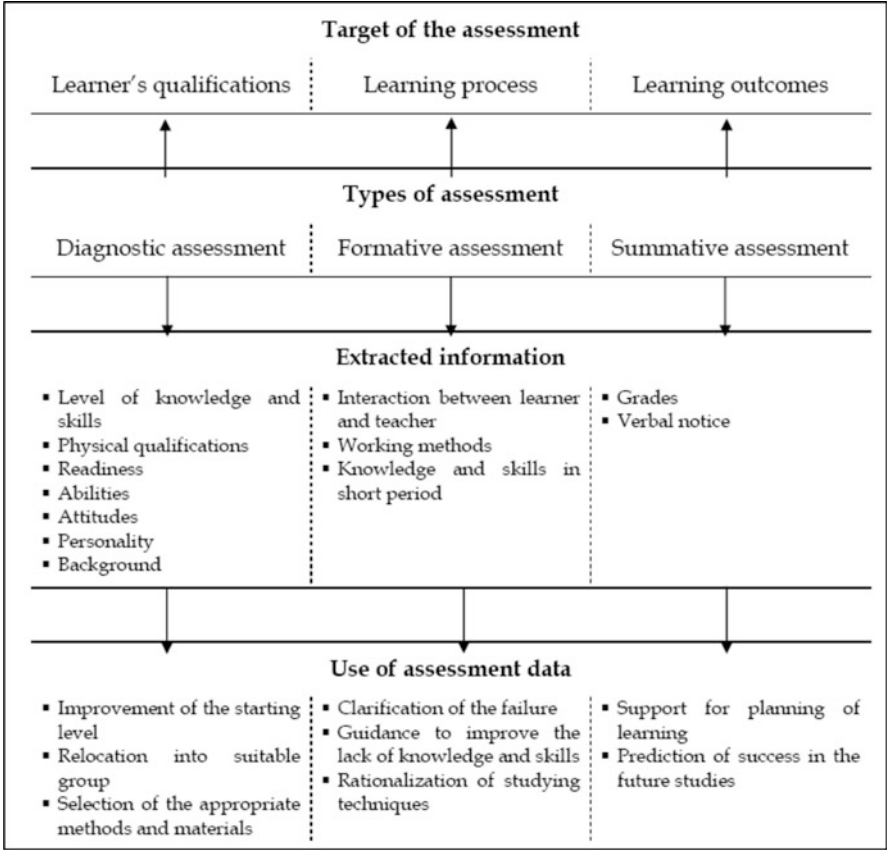


Fig. 7.1 Overview of forms of assessment (Korpinen 1976)

understanding to real world problems. During the past few decades, teachers and researchers have been developing new, more authentic, and alternative ways to assess, viewing assessment as a continuous process, enabling learners to conduct self-assessments, and portfolio-based competence-oriented methods of assessment (see Fig. 7.1).

## 7.2 Moving Ahead to Assessment for Open-Learning Cultures

Many different methods and variations of methods exist in the field of assessment. The more “authentic” assessment forms try to directly measures a learner’s performance through “real-life” tasks such as writing a letter or an editorial

commentary for the school newspaper, designing a lab activity for science learners, or solving some real-life problem, working on an own custom-made software project, writing a term paper that would be self-evaluated, as well as peer evaluated. A similar “natural” way of assessing skills in real contexts is called performance assessment. According to, performance assessment measures skills and understanding by directly measuring a learner’s performance in a natural setting. “Evaluation takes place throughout the entire learning process, not only at the end of a study period”. Systematic observation, checklists, and rating scales are used as evaluation methods:

- *Systematic observation* is based upon a teacher taking notes that describe a learner’s performance based on preset evaluation criteria.
- *Checklists* are written descriptions of characteristics that must be present in an acceptable performance. Use of checklists extends systematic observation.
- *Rating scales* are written descriptions of characteristics and scales of values on which each characteristic is rated. In online learning, performance assessment could include, assessment of, e.g., online discussions, different kinds of learning assignments, and questionnaires.

Portfolio assessment, finally, is another method which is aiming to capture the real performance of students and not just their mere memorization skills. Portfolios—which also will be described later in more detail, are collections of work that are reviewed against preset evaluation criteria. Portfolios could include products like essays, journal entries, video clips, photos, discussions, tapes of presentations, term papers, and designed materials. Portfolios should help to reflect the learning process; products made at different times indicate changes that were made during the time (Wolf 1988). When using portfolios learners should be involved in deciding the evaluating criteria or at least to have been told in advance how the work will be evaluated. Based on these criteria learners decide what they want to include in this so-called sample portfolio which is then evaluated. In online learning, portfolio assessment is quite easy to execute, because all products are in digital format (if they have been saved, e.g., chat discussions). A portfolio could include, e.g., online discussions on a discussion board or in chat, learning assignments, learning diaries, self-evaluations, peer evaluations, opponent reviews, and term papers.

In the following section we will now describe assessment methods which are particular fit for assessing learning in open-learning landscapes, like described before. We will always describe the underlying theoretical principles of a few selected perspectives and will in addition provide an example of possible implementation in the context of open-learning cultures. Furthermore, a summary of the methods’ strength and weaknesses will be given. Table 7.1 lists the methods which will be described.

**Table 7.1** List of assessment methods for open-learning cultures

	Method
1	Self- and peer reflection
2	Peer review
3	Peer assist
4	Self-assessment
5	Peer assessment
6	Self-evaluation
7	Social recommendation
8	E-Portfolio assessment
9	Rubrics

7.2.1
Self- and Peer Reflection

Many authors use the key metaphor of a mirror to describe the notion of reflective practice. In accordance with this Swartzendruber-Putnam (2000) argues that “reflection is [a] form of meta-cognition” that can be understood as “thinking about thinking.” Cook-Sather (2008) defines reflection as the return of the outward, interactive dimension as well as the inward and intra-active dimension of a self-presentation of a subject’s possessor, subsequent to long and thoughtful contemplation, conceptualization, or reconceptualization processes.

The idea of reflection, also referred to as introspection (Danziger 1980), has been brought to the attention of educational practice by Dewey’s early descriptions (1933: 3). He claimed that the process of reflection is about obtaining evidence to support one’s own knowledge and beliefs in order to draw conclusions about the future. Reflective thinking is considered to be “the kind of thinking that consists in turning a subject over in the mind and giving it serious and consecutive consideration” (Dewey 1933: 3). Vince (2004) considers reflection to be “an integral and continuous aspect of strategic learning” that serves “as the bridge between experiences and learning” (Reed and Koliba 1995). Considering the connection between experience and learning it is important to note that reflection is not to be regarded as the individual process of “looking back” (Vince 2004), but rather a process of stepping back from an experience to thoroughly and continuously rethink its meaning in relation to the self and by drawing inferences (Daudelin 1996: 39). As this argument shows, reflection is based on hindsight, insight, and foresight. Reflection as a learning process can therefore be seen as the examination of current and past experiences, practices, behavior, or thoughts in order to make conscious decisions regarding the future (Barnett and O’Mahony 2006). According to Morris and Stew (2007) there are actually three levels of reflection. The first, rather superficial level, allows learners to recall an event; the second enables learners to account for what happened during that event; and the third level, also called microlevel, enables learners to link events to prior knowledge in order to identify open learning and to draw implications for potential changes in the future. However, there are two reasons which justify another perspective on reflection:

1. The individual who is the actual subject possessor is often too involved with the issue at hand, and therefore usually unable to reflect in a self-conscious, critical, and unbiased way.
2. The maximum benefits of reflection are said to be drawn from processes that take place in the community, in interaction with others, and when participants not only have time to engage in slow, non-assumptive thinking but also to value the personal and intellectual growth of themselves and others.

Accounting for these two facts, Lasonde and Reinhart (2004) argue, in context of teacher's reflection, that reflection can generally be divided into two categories: inner reflection and collaborative reflection. Inner reflection, which is also referred to as self-reflection, concerns what an individual thinks about its own work in isolation, e.g., by types of self-talking or introspection. Collaborative reflection, on the other hand, also referred to as peer reflection, is conceptualized as a sort of reflective activity not limited to individual, internal exploration, but also including the social aspect of learner-to-learner interaction as it is pursued within peer-based methods (Kim and Lee 2002). Palastanga sees peer reflection as adding a significant amount of value to the process of reflection. Further on it is argued that peer reflection is analogue to peer assessment within a network-based learning approach that aims to extend an individual's learning experiences by drawing together multiple perspectives of peer learners (Kim and Lee 2002). Irvin (2004) emphasizes that reflection in a networked computer setting expands the social environment for reflection and differs from the traditional understanding of reflection as a unidirectional thought process, but comes closer to what Qualley (1997: 12) refers to as "reflexivity," which does not originate in the self, but "always occurs in response to a person's critical engagement with an 'other' [...]" and as "a bidirectional, contrastive response." Based on Daudelin (1996), who refers to reflection as a problem-solving process, the process can be broken down into four interrelated phases; (1) articulating a problem, (2) analyzing the problem, (3) developing and testing a tentative theory for solving the problem, and (4) deciding how and whether to act in order to resolve the problem. Further on it is argued that in order for critical reflection to happen, it needs to be encouraged and structurally embedded by an awareness of the process (Nikolou-Walker 2007; Daudelin 1996).

A potential course of actions for "reflection-based" quality development in e-learning 2.0 scenarios is provided in Table 7.2.

### **Template for a Reflection Exercise.**

*The below questions help learners to reflect n their learning experiences.*

#### **What?**

- What happened?
- What did you observe?
- What issue is being addressed or population is being served?

**Table 7.2** Reflection-based approach

Activities	Implementation roadmap
1. Articulate a problem or question as object for reflection	<p>In this stage a problem or question is articulated for the reflection process</p> <ul style="list-style-type: none"> <li>• Decide on form of assessment: Self-Reflection (SR) or Peer Reflection (PR)</li> <li>• If PR invite adequate peer(s)</li> <li>• Consider/select supporting method/technique based on SR or PR (other quality approaches, creative techniques)</li> <li>• Decide on a tool that is adequate for reflection and supporting method/technique (e.g., blog, podcast, vidcast, wiki, etc.)</li> <li>• “Verbalize” the problem or question</li> </ul>
2. Analyze the problem/question	<p>In this stage the problem or question is viewed from all different angles possible</p> <ul style="list-style-type: none"> <li>• Apply supporting questions to help reflection process and possibly use 2.0 tools/applications for documentation of results (blog, wiki)</li> </ul>
3. Develop a theory for answering the question/solving the problem	<p>In this stage possible answers for the problem or question are developed and documented</p> <ul style="list-style-type: none"> <li>• Try to develop a solution for the problem or theory for answering the question</li> <li>• If PR with involvement of other peers (observation, feedback, etc.)</li> </ul>
4. Decide how and whether to act in order to solve the problem	<p>In this stage a learner reflects if the reflection leads to a new action strategy</p> <ul style="list-style-type: none"> <li>• Decide based on results of previous stages</li> <li>• If PR with involvement of other peers (observation, feedback, etc.)</li> <li>• Documentation of results</li> </ul>

### So What?

- Did you learn a new skill or clarify an interest?
- Did you hear, smell, or feel anything that surprised you?
- How is your experience different from what you expected?
- What impacts the way you view the situation/experience? (What lens are you viewing from?)
- What did you like/dislike about the experience?
- What did you learn about the people/community?
- What are some of the pressing needs/issues in the community?
- How does this project address those needs?

### Now What?

- What seem to be the root causes of the issue addressed?
- What other work is currently happening to address the issue?

(continued)

- What learning occurred for you in this experience?
- How can you apply this learning?
- What would you like to learn more about, related to this project or issue?
- What follow-up is needed to address any challenges or difficulties?
- What information can you share with your peers or the community?
- If you could do the project again, what would you do differently?

Considering reflection and reflexivity as approaches towards the assessment and of quality, it can be assumed that a very distinct and unique advancement towards this objective is provided. This is in particular based on the fact that it can be argued that the underlying idea of reflection—in its most intrinsic understanding—needs no interaction with other peers at all. Accordingly it does however also imply that the approach does not provide a great degree of comparability in terms of assessing quality. Further on the definitions of reflection as well as reflectivity, which were provided, allow for the conclusion that reflection can be interpreted in various ways and must be considered as a particularly informal approach that can be used rather for developing quality than controlling quality. Accounting for the fact that no concrete strategies have yet been established for, in particular, peer reflection within digitally networked learning communities, (Chen et al. 2009), it is within the scope of further research to examine concepts, such as creativity techniques (“Six-thinking-hats” (Birdi 2005), “Brainwriting” (Rohrbach 1969), “Galerie Methode”, which can be successfully applied as additional supporting measures and in order to enhance the possibilities for developing quality in a creative way. The ability to reflect is as a precondition for not only learning but also for most of other methods and concepts described in the previous sections.

### 7.2.2 *Peer Review*

Peer reviews<sup>2</sup> mainly appear in publications of scholarly journal articles, submissions for proposed papers, or the awards of research grants. The process is a well-established measure of quality assurance and has become an essential component for ensuring the integrity of science. It is most often seen in academic circles as the procedure by which academic journal articles are reviewed by other researchers before being accepted for publication. “Simply defined, peer review is the attentive, unbiased assessment of any scholarly work that is submitted for formal scrutiny” (Ruiz et al. 2007). The process involves colleagues and co-learners giving each other feedback on a particular subject, and in most cases a particular piece of work, for the purpose of evaluating its

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<sup>2</sup> Mostly based on Rowland (2002).

quality, thereby exposing weaknesses and areas for further improvement. Four key aspects determining the peer review process may be taken into account (Rowland 2002).

1. Blind vs. open refereeing
2. Restricted access vs. peer commentary
3. Criteria and guideline-based vs. free commenting
4. Qualification, background, and motivation of reviewers

These parameters significantly influence the approach of peer reviewing and the differences will be explained in the following.

### **Blind Vs. Open Refereeing**

Most forms of peer reviewing follow the single-blind model, where reviewers know the author's name, but the author does not know the names of those conducting the review (Rowland 2002). Other models include double-blind refereeing, where the author's identity is hidden from the reviewer and open refereeing, where the author knows the referee's identity and vice versa. Double-blind refereeing is considered to considerably limit the room for bias due to status, personal relationships, research attitudes, and sex and therefore produces more objective and better reviews than non-blinded reviews (Lock 1994).

### **Open Vs. Restricted Access**

According to Harnad (1996, 1999) peer reviewing allows for a restricted and an open approach. The restricted forms are those in which a small number of individuals are requested to pass their judgment on a particular paper. On the other hand, the open approach, also referred to as peer commentary, involves other scholars being allowed to append comments to various pieces of work made openly accessible. Apart from being considered as a supplement to the traditional form of PR, peer commenting is often criticized for not satisfying the objective of sorting and filtering out poor work, making it, as a consequence, a very time-consuming endeavor for reviewers (Rowland 2002). Additionally, it is argued that open peer commentary, in particular, post publication, will be reviewed by significantly more ill-informed or prejudiced peers because the best qualified reviewers are unlikely to have the time (Rowland 2002).

### **Criteria and Guideline-Based Vs. Free Commenting**

Numerous structured guidelines (Collison and Parcell 2001) either of generic format or adjusted to specific domains and fields of study are available to support, especially to those, who are unfamiliar with the process of assessing and evaluating

or a particular subject. Furthermore, peer reviewing is often based on institutional or organizational standards for publications.

### **Qualification, Background, and Motivation of Reviewers**

Naturally the peer reviewing process depends to great extent on the qualification of participating peers. It is therefore recommendable to support learners in learning about the objectives of the PR process and honing their competence regarding the overall ability of providing quality, constructive feedback by means of making quality examples of peer reviewing available.

In order to outline how peer reviewing could be applied as an approach for assessing the quality in EL 2.0 scenarios an exemplary course of actions and activities will be examined in detail (see Table 7.3).

As the discussion and Scenario illustrated, Peer reviewing within e-learning 2.0 environments is challenged by the fact that technology-enhanced learning materials can easily go beyond the known formats of scientific research papers and increasingly include hyperlinked text, multimedia elements, or even case-based simulations (Ruiz et al. 2007). As Ruiz however argues, peer reviewing of technology-enhanced learning materials does not differ substantially from that of traditional manuscripts, but introduces new and unique demands considering educational technology, pedagogy, format, usability, navigation, interactivity, delivery, ease of updating, distribution, and access (Ruiz et al. 2007). On the other hand that it can be argued that the implications of the 2.0 movement contribute in various ways to enhancing the peer review process. Considering the potential of peer reviewing as an approach, it must be accounted for the fact that peer reviews are in the traditional understanding—which usually implies blinded refereeing, with restricted access and in the majority of cases based on predefined criteria, applied by rather highly qualified professionals, significantly different peer reviews than peer reviews which imply open refereeing, peer commentary, and free commenting by rather less educated learners. As a consequence the peer-reviewing process cannot be generalized if one accounts for the various ways of possible combinations between the described aspects. Unfortunately, this complicates the question in how far the perspective can serve the various objectives that are entailed in the challenge of developing quality in e-learning 2.0 scenarios. Nevertheless, the opportunity to demand the advice and consultation for improvement of a certain piece of work from peers that probably have more experience and expertise in a certain field is already well-established principle that must be taken into account when considering new approaches.

#### **7.2.3 *Peer Assist***

Peer assisting is a way of sharing knowledge for the purpose of learning from and with each other and thereupon collaboratively creating and adapting practices



**Table 7.3** Peer-review implementation roadmap

Phase	Activities	Possible implementation roadmap
1. Selecting and inviting reviewer(s)	<ul style="list-style-type: none"> <li>• Decision regarding the characteristics of the planned peer review</li> <li>• Blinding vs. open peer review</li> <li>• Open vs. restricted access and number of reviewers</li> <li>• Structured guidelines vs. free commenting, 4. Specialized reviewers and training of reviewers</li> <li>• Selecting and inviting reviewers</li> </ul>	<ul style="list-style-type: none"> <li>• If no particular method to identify the most adequate reviewer(s) is at hand and the reviewers are not pre-set or randomly chosen, the selection is usually accomplished via skimming through the profiles of potential reviewers on institutions Web pages or social networking sites and seeking contact with those or authors of adjacent or similar topics through scientific networks</li> <li>• Invitations are usually sent via e-mail</li> </ul>
2. Delivering the initial piece of work	<ul style="list-style-type: none"> <li>• Delivery of the initial piece of work to the selected (group of) reviewer(s)</li> <li>• Compared to other initial versions of work, the “drafts” that present the basis for PR should generally be already relatively well developed</li> </ul>	<ul style="list-style-type: none"> <li>• In most cases the draft version is sent to the reviewer via Mail by an editor who serves as middle-man that can if necessary protect identities</li> <li>• Other possible ways of publishing the initial version (such as via IM, on a blog/wiki (with restricted access) or within a file depository) depend on the chosen form of peer review (Publicity of authors and reviewers (Blind vs. Open), Authorization and Number of reviewers (Open vs. Restricted access), etc.</li> </ul>
3. Reviewing and transmitting feedback	<ul style="list-style-type: none"> <li>• Reviewing and transmitting feedback</li> </ul>	<ul style="list-style-type: none"> <li>• For the sake of gathering individual and independent opinions and to avoid the potential drawbacks of deliberation, hidden profiles, and common knowledge effects, single reviews should not be accessible to other participants or open for discussion. All feedback is therefore only made available to the editor (via Mail or restricted access to file depositories) without allowing any communication between the reviewers</li> </ul>
4. Rework by the author	<ul style="list-style-type: none"> <li>• Rework by the author</li> </ul>	<ul style="list-style-type: none"> <li>• When the PR is based on single-blind or double-blind refereeing, the author of the draft receives suggestions and criticism on his work via e-mail from a third party</li> <li>• When the PR is based on open refereeing, it allows the author to potentially contact individual reviewers for further inquiries</li> </ul>
5. Submitting and evaluating	<ul style="list-style-type: none"> <li>• Submitting and evaluating of the final piece of work</li> </ul>	<ul style="list-style-type: none"> <li>• The revised (final) version is delivered within a given period of time by the author via e-mail</li> </ul>

which suit the context at hand. Accordingly peer assists basically rely on the assumption that knowledge is context dependent and cannot always be transferred easily to differing contexts (Collison and Parcell 2001). In addition to that the process is generally used for the purpose of attacking a “real” problem, task, or assignment. In contrast to other concepts of collaboratively assessing and developing quality, peer assisting, which is sometimes also referred to as Peer or Bench Learning (Ehlers 2008), is however less well defined and -established. The term, which was coined by British Petroleum in context of knowledge management (Gurteen 2007) refers to the approach of bringing together a group of peers to get feedback on an authentic problem, project, or activity in order to draw lessons from the participants’ knowledge and experience (Robertson 2006). “The power of the peer assist was not that it told us something we didn’t know, but rather that it got us into action to prevent us going down the same path as others” (Collison and Parcell 2001).

It is argued that peer assisting is particularly applicable if one or two of the following circumstances occurs:

- A person is assigned with new a task or challenge within a field of unfamiliar knowledge or experience
- A person is stuck in a particular situation for a relatively long time and unable to identify the next steps or insecure which procedure to follow

These circumstances demand a particular approach, which is, compared to, e.g., peer reviews rather focused on an understanding of joining others in the process of learning, while addressing particular problems collaboratively and thereby facilitating a gain of knowledge. Accordingly the idea of the underlying method is not so much to judge but to rather critically value the work of others (Ehlers 2008).

A comparison between Peer Assist and Peer Reviews accentuates the key differences between the two underlying ideas in terms of goal, approach, implied task, selection of peers, results, changes in perspectives, and reporting (see Table 7.4).

The Scenario is based on the BP’s generic 12-step procedure for peer assist processes and Ehlers (2008: 26) description of proceedings for online peer assists in higher education with the appropriate utilization of Web 2.0 applications in specific phases of the process. It will provide a guideline of steps, aligned to suit e-learning 2.0 contexts (see Tables 7.5 and 7.6).

Peer assisting is a rather informal and process-driven method. Accordingly the method entails high potential for developing quality with a strong focus on collaboration and problem-solving. In ambition to seek opportunities to share and reuse knowledge, experience, and learning, peer assist must be highly appreciated as an innovative approach, as they take away some of that one-way learning sentiment of other approaches such as peer reviews. Further on peer assisting is considered to allow for great opportunities to incorporate other learning units and creative techniques (Robertson 2006). The additional use of After Action Reviews and Follow-Ups for instance is suggested in order to expose whether the process went according to plan and to disclose what participants in

**Table 7.4** Peer review vs. peer assist (Dixon 2000)

	Peer review	Peer assist
Goal	Judging work	Transfer of knowledge
Approach	Evaluative	Collaborative
Implied task	Critique particular aspects	Learn with and through the involved peers
Selection of peers	Reviewers often selected by others	Assistee(s) select(s) assisters themselves
Often results in...	“Dog and pony” show with the goal of a good evaluation	Problem-solving working session(s)
Task sharing	Tendency of unvarying and monotonic roles (some always review while others always receive)	Reciprocal, assistants can soon become assisters themselves
Reporting	Report is often sent directly to a superior of the originator	Report and suggestions remain to the individual or team asking for assist

the process can learn for similar situations and potential future rounds of peer assisting (Robertson 2006). Concluding peer assists reassemble collaborative ways of stimulating the learning process (Collison and Parcell 2001), promote the sharing of learning experiences between teams and support to develop strong networks and cohesion (Ehlers 2008: 25).

If one studies the existing literature on “assessment” and “evaluation,” in context of quality development for learning and EL, and with an emphasis towards the characteristics of self- or peer assessment/evaluation, one—sooner or later—has to recognize that many experts disagree in their notions of the two terms. Considering this, Scanlan (2003) states that, “depending on the authority or dictionary consulted, assessment and evaluation may be treated as synonyms or as distinctly different concepts.”

Accounting for this fact, the different theoretical perspectives of self-assessment, peer assessment, and self-evaluation will be examined as one approach for assessing and developing quality. In order to substantiate the basis for further research, the underlying theory of each concept will be examined individually.

### 7.2.4 Self-Assessment

“Self-assessment is the process of critically reviewing the quality of one’s own performance and provision.” The utilization of self-assessment is consistent with the general perception that students should be more responsible for their own learning and the processes of assessment and has become an important and innovative method in the understanding and constitution of modern learning and assessment (White 2009). Boud (1991) states that the most defining characteristic of self-

**Table 7.5** Potential course of actions—peer assist-based approach—Part I

Phase	Activities/purpose		Implementation roadmap
Preparation and prearrangements	1. Clarify the purpose	<ul style="list-style-type: none"> <li>• Internal reflection of the problem</li> <li>• Considering if peer assist is the appropriate method</li> <li>• Ensuring that the purpose and process of peer assist is known and understood</li> </ul>	<ul style="list-style-type: none"> <li>• Short explanation of the problem on wiki, forum, or blog (including a few links to brief introductions and descriptions of peer assists)</li> <li>• Specification of expected benefits of a peer assist for the particular issue within the chosen publishing/collaboration platform</li> </ul>
	2. Select participants and send invitations	<ul style="list-style-type: none"> <li>• Finding a group of ideally 6–8 people with a right diversity of skills, competencies, and experience through mixing up seasoned experts with participants who are not so familiar with the process</li> <li>• Ascertain if the particular issue has already been addressed and if a solution or pattern has been achieved and documented that could be adopted</li> <li>• Invite the chosen participants</li> </ul>	<ul style="list-style-type: none"> <li>• Skimming through available online profiles of possible candidates</li> <li>• Assistant sends invitations via e-mail to the chosen participants</li> </ul>
	3. Identify and invite a facilitator	<ul style="list-style-type: none"> <li>• Identify and invite a facilitator</li> <li>• Facilitator should not be the assistee himself or part of the group that demands assistance</li> <li>• Facilitator = an “external” peer that is determined by the assistee or group who manages the organizational aspects of the process and thereby ensure that the PASS reaches the desired outcome</li> </ul>	<ul style="list-style-type: none"> <li>• Chosen facilitator gets an invitation via e-mail (including a description of the associated duties and responsibilities or a link to exemplary well-documented case)</li> </ul>

(continued)

**Table 7.5** (continued)

Phase	Activities/purpose	Implementation roadmap
4. Set up an environment to collaborate	<ul style="list-style-type: none"> <li>• Establishment of a central destination to publish details on timing and scheduling and to outline the desired deliverables, guidelines, and expected behavior</li> </ul>	<ul style="list-style-type: none"> <li>• For this purpose an always accessible and easy editable area within platform such as a wiki, blog, or protopage is predestinated</li> </ul>
5. Set up a schedule for the execution	<ul style="list-style-type: none"> <li>• Setup of a time frame that accounts for complexity of the problem and the familiarity of the participants with the context</li> <li>• Ensuring the availability of all participants</li> </ul>	<ul style="list-style-type: none"> <li>• Depending the setup of the group times and dates can be negotiated throughout the process by utilizing tools such as doodle or forced upon the participants as a preset schedule</li> <li>• Either way, the resulting time schedule should be available within the central environment to collaborate and communicate at all times</li> </ul>

assessment is “the involvement of students in identifying standards and/or criteria to apply to their work and making judgments about the extent to which they have met these criteria and standards.” Boud (1994) argues further that self-assessment seems to affect students’ results, critical awareness of their own work as well as their sense of responsibility, independence, and their confidence in their own abilities in a positive manner. In addition to that the “new found” confidence can also have positive effects on the quality of later work. As a consequence the most essential benefit of SA lies in the process of students reviewing their own learning. This helps them to acquire reflective habits of mind (Boud 1994), which is key to continuous and progressive improvement of their learning capabilities, and also to discover, reveal, and highlight the importance of subjective perspectives and gains in learning, which could otherwise have not been revealed by attempts of assessing and evaluating the results from the perspective of someone else other than themselves (Boud 1994; Curtz 1994). “Growth in intelligence, or thinking, is precisely growth in the capacity for ongoing reflective self-assessment” (Curtz 1994). The key motivation for introducing SA relies on the potential to enable students to develop an awareness of their own long-term learning development and performance. The ability to self-assess is considered to be a key necessity for lifelong learning and a core educational skill, which educators within higher education would like to see being developed as early as possible.

**Table 7.6** Potential course of actions—peer assist-based approach—Part II

Phase	Activities/purpose	Implementation roadmap
Execution	<p>First round: problem presentation period (approximately 10 min)</p> <ul style="list-style-type: none"> <li>• Highlight the concrete purpose the PASS</li> <li>• Provide a short and sharp outline of the context and make a clear request of what is expected to be accomplished</li> </ul> <p>Second round: question period (approximately 30 min)</p> <ul style="list-style-type: none"> <li>• Participants improve their uptake and understanding of the problem and context by asking questions, challenge mental models, and offer opinions and new lines of inquiry while critically addressing the issue rather than the assistant</li> <li>• Facilitator is responsible to ensure that the discussion flows smoothly and does not get lost in talk or fizzle out</li> </ul> <p>Third round: initial proposal period (approximately 45 min)</p> <ul style="list-style-type: none"> <li>• Participants present (and discuss) their suggestions on the issue (explaining what they have learned so far, which possibilities they would consider, and why they think it is the best possible option to progress)</li> </ul> <p>Fourth round: final proposal period (approximately 30 min)</p> <ul style="list-style-type: none"> <li>• Participants are invited by the facilitator to hand in one final proposal</li> </ul>	<ul style="list-style-type: none"> <li>• Reuse of the provided explanation to clarify the purpose (complemented according to the background of the selected participants)</li> <li>• Presentation of problem description (including previously achieved results and plans for the future) within the installed PASS collaboration platform (Wiki/Blog/Protopage)</li> <li>• This step can be accomplished via the wiki or forum within the central collaboration platform or as an online chat or VOIP session</li> <li>• The first option has the advantage that the results are instantly and permanently accessible to all participants, while a Chat or VOIP session allows for a natural and free progression of discussions but requires to explicitly generate a transcript</li> <li>• In cases of very complex issues summarizing the outcomes in an “after action review” on a forum, wiki, or blog is particularly advisable either way</li> <li>• Suggestions are ideally placed within a wiki or forum in order to allow all participants to read and discuss the suggestions of others</li> <li>• This final feedback could possibly be posted within a final thread/entry within a wiki/forum/blog to accumulate the final thoughts of all participants</li> </ul>

(continued)

**Table 7.6** (continued)

Phase	Activities/purpose	Implementation roadmap
Fifth round: decision (approximately 10 min)	<ul style="list-style-type: none"> <li>• The assistant decides based on the participants' suggestions and all other previously accomplished work which recommendation(s) will be taken into action and why and how the approach will be followed in the further proceeding</li> </ul>	<ul style="list-style-type: none"> <li>• The final decision, its motivation and contact information or further dates for potential reconnecting should be publicized on the central collaboration platform</li> </ul>

In the educational context SA requires an environment that allows its participants to proceed in mutual cooperation (Curtz 1994) while remaining sufficiently autonomous (Boud 1994). A prerequisite of SA is that it takes place within a context in which there can be open and vigorous discussion of educational issues.

There are however scenarios, such as assessment situations, that publicly place students in rank order, include judgments or recommendations for employment, or have some sort of other outcomes that are significant to the “external” world, making self-assessment inapplicable (Boud 1994). Boud argues that there are contexts “so intrinsically oppressive—to staff and to students” that an implementation of self-assessment would be highly impractical. Therefore the following contextual prerequisites can arguably be understood as “Do’s and Don’ts” for the successful implementation of SA (see Table 7.7).

Self-assessment demands a variety of skills and knowledge from lecturers in order to accurately, sufficiently, and timely address the misconceptions that students tend to harbor about the process and its outcomes. Therefore the introduction of SA requires a sensitive approach and detailed preparation including lecturers placing more emphasis on the relationship between assessment tasks and overall course outcomes, the processes of involving students, and preparation of guidelines to explicitly support students’ understanding of what excellent work looks like, and how to execute excellent assessment. In practice this means that students have to be taught how to evaluate their own work accurately and develop the appropriate skills to make SA have a positive impact on their achievement. Therefore lecturers need to briefly and clearly outline the general context of learning in order to highlight the importance and coherence of self-assessment and additionally recalibrate the shift of control and power that occurs when assessment decisions are shared.

In order to successfully implement SA, it is suggested that lecturers accurately define self-assessment as “judging the quality of one’s own work” and strive to make the benefits and advantages of SA visible to learners before and throughout the process. Furthermore, detecting and exposing misconceptions by means of prompting students to verbalize their feelings and beliefs about self-assessment is very important within the early stages of introducing the method. Furthermore, SA should always be introduced by means of beginning with small exercises like short essays and then progress to more demanding tasks. Sessions including small group

**Table 7.7** Self-assessment—liberating vs. oppressive factors (Boud 1994)

	Liberating SA factors	Oppressive SA factors
Motivation of introduction	Enhancing learning	Institutional or other external requirements
Rationale of introduction	Clear and with an opportunity to question it	Course requirements
Definition of criteria	Collaborative establishment (implies contributions of—and negotiation with learners)	Determined solely by lecturers or externals
Determination of the process	Learners have influence on the process and course of actions	Process is imposed on learners
Impact on formal entities of learning	Identifiable contribution to formal decision-making	Outcomes are not accounted for formally
Integration into overall learning approach	SA is one of many complementary strategies to promote self-directed and interdependent learning	SA is isolated from other strategies (solely tacked onto existing subjects)
Scope and impact	SA practices permeate the whole course	Marginalized importance of SA (applied only to subjects with low overall status and significance)
Sharing control	Lecturers and staff are aware and consent to share control of assessment	Lecturers and staff retain all control (sometimes despite appearing otherwise)
Peer feedback	Qualitative peer feedback is used as part of the process	Qualitative peer feedback is subordinated to quantitative peer assessment
Student's records	SA becomes/is part of a profiling process in which students have an active role	Student records are created without or only little regard to their own input
Setup	SA activities are introduced in step with the students' capabilities in learning how-to-learn	SA is a one-off event either without any or only with little preparation

work, in which the members of each group review, evaluate and discuss small examples of their work in turn, is an adequate introduction to the method, since it allows lecturers to moderate and guide the progress. Additionally, selecting a performance that fits students' experience and expertise supports the purpose, since learners usually experience difficulties generating criteria for fields in which they only have very limited or no experience. Considering that the workload for lecturers does not normally decrease before both lecturers and students have acquired significant experience and expertise, the introduction of SA should not be considered as a time-saving measure.

Finally, the overall objectives of SA are supported if lectures not only publicize the use of the method to their students but also prepare a rationale about why self-assessment is an important part of an assessment repertoire.

Since the involvement of learners in the assessment process on basis of self-assessment is already a relatively well-defined and established method within the



context of learning, it can be considered as advancement towards the assessment and development of quality within e-learning 2.0 environments.

### **7.2.5 *Peer Assessment***

Topping (1998: 250) defines peer assessment (PAM) as “an arrangement in which individuals consider the amount, level, value, worth, quality, or success of the products or outcomes of learning of peers of similar status.” PA is based on the philosophies of active learning (Falchikov and Goldfinch 2000); based on Piaget (1971), as it implies the joint construction of knowledge through discourse (e.g., Vygotsky 1962). PAM stands for a group of learners with similar backgrounds and abilities that not only play the learner role but also act as instructors by means of assessing their peers’ learning (Topping 1998; Topping and Ehly 2001). Referring to peer assessment, Black and William (2006) argue that examining the work of other students alongside their own, supports students in understanding, accepting, and making sense of assessment criteria, which can increase students “involvement, responsibility, and excellence,” and help to establish more distinct and skill-oriented learning units based on integrating additional and enhanced feedback (Weaver and Cottrell 1986). “An important educational function of peer assessment is the provision of detailed peer feedback.” (Falchikov and Goldfinch 2000). Black et al. (2003) accentuate that peer assessment amplifies the student voice in the learning process, leading to meta-cognitive benefits for lecturers and students, and focusing the assessment objectives, purposes, criteria, and marking scales. PAM is considered to deepen the involvement of students with their learning, increase their interest, activity, interactivity, identification, bonding, self-confidence, and empathy with their peers as well as often immediately sharpening their general understanding of learning. This is to large extent a result of the fact that being an assessor as well as being an assessee, brings about a change of perspective and can promote a sense of ownership, personal responsibility, and motivation.

However, the increase in student responsibility can cause insecurity and even anxiety for participants who are not familiar with the process. This can be reduced by initial positive feedback, which may, in turn, also heighten the acceptance of subsequent negative feedback. There are also difficulties concerning the validity and reliability of assessment done by students. Saving tutor time devoted to summative marking seems to be an unrealistic objective for the introduction of PA due to the fact that student marking is considered to be to unreliable (Bostock 2004) Of course, this would change with the help of negotiated criteria (Race 1998) and more assessment practice (Bostock 2004). With increasing resource constraints and decreasing capacity of academics to provide sufficient feedback, peer feedback could become a central part of the learning process, rather than an occasional option. Apart from students providing grades as part of the summative assessment

**Fig. 7.2** Feedback Loop  
(based on Trahasch 2004)



process is perceived as problematic and therefore there is little consensus on its value.

A collaborative peer assessment processes can be subdivided into three different phases of (1) authoring and submission of an artifact, (2) review of the submission on the basis of a given set of criteria and feedback schema, and (3) discussion of a certain aspect exemplified by the artifacts or reviews (see Fig. 7.2).

Table 7.8 defines the following steps for the peer-assessment process.

A representative example of formative and summative online peer assessment was carried out in 1999/2000 by the author of an MSc module (Bostock 2004). The process included 38 students developing instructional Web applications on a topic of choice for 25 % of the module assessment. After one round of formative reviews in the form of text criticisms and percentage marks against five criteria given by four assessors per assessee, students were allowed to improve their work. Following a second round of summative assessment by the same assessors, the compiled four marks per author were sent to the tutors, who decided to remark all the work. In general, students perceived the formative reviews as useful, and the text feedback was valued more than the marks. They liked the fact that anonymity allowed for “ruthless” feedback and appreciated the possibility of examining other students work.

### 7.2.6 Self-Evaluation

The concept of self-evaluation (SE) is generally defined as students judging the quality of their work, based on evidence and explicit criteria, for the purpose of

**Table 7.8** Self-assessment—liberating vs. oppressive factors (Boud 1994)

Step	Pre-peer assessment
1	Development of assignment
2	Collaborative definition of criteria aligned to the particular task and field of study <sup>a</sup>
3	Individual or group-based completion of the assignment and presentation
4	Peer assessment
5	Review: completion of review templates, sheets, or grids
6	Post-peer assessment
7	Discussion and processing of peer evaluations and feedback
8	Rework of assessed materials

<sup>a</sup>See self-assessment

achieving better results in their work in the future. According to Rolheiser and Ross (2001), teaching students how to assess their own progress against self or predefined criteria or known quality standards, considerably increases students’ performance, self-efficacy and increased, intrinsic motivation. According to Ehlers (2008) and Rolheiser and Ross (2001) self-evaluation, even though it leaves a major portion of decision-making in the hands of the students, does not rely upon the arbitrariness of students (Ehlers 2008). The following steps, known as the “4-Stage Model of Self-Evaluation,” are suggested as a general course of activities for self-evaluation. (Ehlers 2008; Rolheiser and Ross 2001):

1. Definition of criteria
2. Assessment by means of application of determined criteria
3. Feedback and processing of stakeholders evaluation
4. Development of objectives, plans, and strategies for further learning

An exemplary example for a possible course of actions (see Table 7.9) of will be provided on based on the “4-Stage Model of Self-Evaluation” (Ehlers 2008 and Rolheiser & Ross 200X):

All three presented methods (self-assessment, peer assessment, and self-evaluation) are highly applicable for formative assessment, and can also be used as a component in a summative assessment. The introduction of the methods is generally considered to be best suited for short and well-structured, text-based content. The methods allow for a high degree of collaboration and depending on the setup also entail the negotiation of criteria.

**7.2.7 Social Recommendation**

This chapter will introduce the basic principles of Social Information Retrieval (SIR), present some selected techniques and mechanisms of SIR and outline the necessity for, and benefit of these in context of Quality Development for technology-enhanced learning 2.0.

**Table 7.9** Self-assessment: exemplary course of actions for assessing and developing quality (Ehlers 2008)

Phase	Activities/purpose	Implementation roadmap
1. Definition of criteria	<ul style="list-style-type: none"> <li>• Early involvement of students</li> <li>• Development, negotiation, and weighting of a criteria catalogue(aligned to the particular task and field of study)</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation of predefined criteria catalogue within a forum or wiki</li> <li>• Negotiation of criteria via online survey/poll or as through a live chat session</li> <li>• Publication of settled criteria and weighting in a blog</li> </ul>
2. Assessment by means of application of determined criteria	<ul style="list-style-type: none"> <li>• Students autonomously evaluate their own learning process in consideration of the previously developed criteria</li> <li>• Explanatory best practice examples are provided</li> <li>• Supporting concepts and strategies of self-evaluation such as graphic organizers like traffic lights, triangles, KWL/KWHL grids, PMI sheets should be explained</li> </ul>	<ul style="list-style-type: none"> <li>• Reflection on learning is usually done within a Blog that then serves a personal learning diary (E-Portfolio)</li> <li>• Explanatory examples should be made easily accessible and provided in a way that allows further questions and discussion such as forums or wiki</li> <li>• Supporting concepts could potentially be integrated into the online learning environments (E-Portfolio software)</li> </ul>
3. Feedback and processing of stakeholder evaluation	<ul style="list-style-type: none"> <li>• Presentation of learning contents together with student's own evaluation feedback</li> <li>• Triangulation of stakeholder views in order to develop a consensus and transform the results into options and possibilities to advance and improve</li> </ul>	<ul style="list-style-type: none"> <li>• Depending on the complexity and granularity of the content, a blog (simple general commenting functionality) or wiki (more sophisticated and advanced possibilities) can be used in order to allow a student's peers to selectively provide feedback on single aspects or the subject as a whole</li> <li>• The summary report of the gathered insights, suggestions, and conclusion should finally be provided by the assessee on the chosen platform (i.e., as an individual entry within the blog or wiki)</li> </ul>
4. Development of objectives, plans, and strategies for further learning	<ul style="list-style-type: none"> <li>• Identification of areas and objectives for competence development as well as plans and strategies to achieve them</li> <li>• Consultation and negotiation with lecturer, mentor, or advisor</li> <li>• Development of a final conclusion including strengths, weaknesses, and strategies to advance (i.e., concrete next steps)</li> </ul>	<ul style="list-style-type: none"> <li>• Consultation of lecturers can take place as dialogue within a blog or wiki or as an online chat session</li> <li>• Results and final conclusions should be presented contiguously to the content and feedback of assessment and therefore ideally within the previously used system</li> </ul>

As established over the course of the previous chapters, the quest for developing quality in EL 2.0 is, in many ways, associated with and linked to the increased involvement of learners. This, however, implies a switch of power, responsibility, and flow of information. It also results in the fact that the average amount of information, published by an active learner, increases significantly. Koper and Tattersall (2004) argue that without any supporting structures or technologies it becomes virtually impractical for the participants of learning networks to identify the most appropriate information. Kalz et al. (2007) argue that as the availability of open educational resources increases, a disparity between the availability of resources and the educational use of the available material increases, too.

Learners are in deep need of concepts and techniques, such as filtering, clustering, and recommending technologies, which complement the presented methods by supporting learners in overcoming the information overload at hand (Melville et al. 2002) and/or to find peers with similar or adjacent interests, knowledge, and experience for the application of the previously discussed methods.

### **Social Information Retrieval**

Social Information Retrieval (SIR<sup>3</sup>) is a concept that has been around since the popularization of the World Wide Web and is generally defined as an approach, or set of techniques, that empowers individuals in obtaining relevant information by “harnessing the knowledge or experience of colleagues, friends, peers, and others” (Vuorikari et al. 2009). In other words, and in its broadest sense, SIR stands for what Morville (2004) expressed by stating “we use people to find content” and “we use content to find people.”

Summarizing Social Information Retrieval essentially comprises a set of techniques and mechanisms, such as social navigation, collaborative filtering, social network analysis, social bookmarking, as well as sharing queries, tags, annotations, ratings, and evaluations (Vuorikari et al. 2007: 5).

### **Social Navigation**

According to Svensson, asking another person for the direction to a place, instead of looking at a map oneself, is a common way of navigating an information space in the real world. Any form of communication that takes place between agents (human or artificial) to navigate an information space is referred to as social navigation (SN). Simplified, social navigation means nothing else but providing the users of an environment with information, dynamically, regarding the actions of other users within the same environment (Kurahila et al. 2002). In this instance Dieberger (2001) actually defines social navigation as a “design approach” based

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<sup>3</sup> Sometimes also referred to as or Social Knowledge Retrieval (SKR).

on “either visualizing traces of other users’ activities” or on the “direct or indirect communication between users, with the goal to facilitate locating and evaluating information.” Furthermore, Dieberger et al. (2001) emphasizes that social navigation can occur in a variety of ways and it is still uncertain which forms are most beneficial to which purpose and fields. As Dieberger argues, Social Navigation can be classified into (a) indirect forms of SN and (b) direct forms of SN. Referring to this classification Munro et al. (1999) uses the example of a grocery store: if people visiting the store are given recommendations regarding what other customers have bought, the navigation is indirect because information is based on the aggregated history of previous, non-concurrent, events of usage and must therefore be brought to the attention of users by means of associated mechanisms.

If, on the other hand, people get to know about other customers moving around the store and have the possibility to seek assistance, navigation is direct, because actors are co-present and their activities are immediately perceived. Dieberger (1999) points out that most experiments with social navigation in an educational setting have been forms of indirect social navigation, explaining the prevalent use of the term “footprints” (of other users) to illustrate, the basic idea of SN (Dieberger et al. 2000).

## **Recommender Systems**

Recommender Systems (RSs) are probably the most well-known, established, and accepted concepts of SIR and SN on the Web. They have been utilized for years as customer-based recommendation systems by social networking services, the e-entertainment industry, and foremost for e-commerce online sales companies such as Amazon.com, Ebay.com or Linden et al. 2003). “Social recommendation techniques can help in exploiting similarities between learners to suggest potentially relevant learning objects that might not be found by explicit search” (Nejdl and Wolpers 2004). Generally speaking, the core task of a recommender system is to recommend valuable items, in a personalized manner in order to help users make good choices from a large number of alternatives without having sufficient personal experience or awareness of the alternatives.

Adomavicius and Tuzhilin (2005) state that the general purpose of RS is to preselect information that users might be interested in. According to Duval (2006) transferring and narrowing down the concept of Google’s PageRank to learning materials, by means of determining how useful the collective of learners perceived a particular learning object (or learning sequence) to be for a specific learning purpose, would provide individual learners with a solid indication of the expected subjectively perceived quality of an particular object (or sequence).

Comparing RSs for E-Commerce with RSs for Learning the mere difference between the act of buying an item and broadening one’s knowledge through learning make providing recommendations for customers and learners so fundamentally different regarding the complexity of accounting for the cognitive state of

users (user model), as well as developing semantic relationships between items (environmental conditions), that RSs for E-commerce can in the best case serve as an inspiration for designing and developing RSs for TEL. Drachsler et al. (2009) closely examined the differences between RSs for TEL and RSs for other domains, specifically E-Commerce, and elaborated the following aspects as key when considering the design of RSs for TEL:

- The key recommendation goal of RSs for TEL is to provide learners with suitable LAs (LOs and potential peers) in order to support their competence development within an LN
- RSs for TEL have to deal with different levels of complexity for different learning situations that a learner might get involved in: i.e., the cognitive state of the learner and learning content as well as the purpose, role and context of specific LA may change over time, context, and across various stages of learning
- RS for TEL have to incorporate relevant pedagogical rules, such as taking into account a learner's individual competence level in order to suggest appropriate LAs

As a consequence Drachsler et al. (2009) argue that it is a very demanding, intricate, and sometimes even impossible endeavor to apply one RS from a particular domain to another domain with different recommendation purposes and domain characteristics. Drachsler et al. (2004) also emphasize that the advent of Web 2.0 and the resulting amplification of lifelong learners, acting in different roles (teachers, learners, or knowledge providers), in different LNs in parallel, with the intention of publishing their own LAs as well as to share, rate, whilst adjusting their learning activities in relation to other learners, makes RSs for TEL particularly beneficial for bottom-up approaches to learning, informal learning, EL 2.0, or in general, learning that is based on the participation of the (lifelong) learners.

Irrespective of the potential domain, any RS can be based on and realized through a variety of different strategies. According to the current literature, there are two major perspectives regarding the implementation of RSs. The first strategy is referred to as a “top-down perspective” (Drachsler et al. 2009) “content-based approach” (Bell and Koren 2007) This relies on profiling items as well as the users themselves in order to allow algorithms to associate users with matching items. The underlying idea of the approach is to enhance filtering techniques through well-defined educational metadata and educationally influenced filtering decisions and therefore requires gathering external information that might not be easy to collect. The second strategy is referred to as a “bottom up perspective” (Drachsler et al. 2009). This partially avoids this difficulty encountered with a top down strategy, as it relies on an approach that is similar to *collaborative filtering* (CF) (Bell and Koren 2007) and basically generates recommendations based on learner provided information, such as “tags,” “ratings,” or “behavior data.” The latter perspective is therefore built on the underlying assumption of CF that those who agreed in the past tend to agree again in the future (Bell and Koren 2007). As a consequence this approach largely avoids the explicit and extensive collection of data about users or items and instead seeks to analyze the relationships and

interdependencies between potential entities in order to identify new user–item associations. This unveils patterns that could hardly be uncovered using content-based techniques.

Even though it has been promoted by several theoretical frameworks such as PageRank (Duval) or Smart Recommendation (Tang and McCalla 2005), the concept of RSS for technology-enhanced learning has yet to be fully accepted. Nevertheless nonexclusive, educational services such as Scribd.com and several generic 2.0 applications, especially social bookmarking services such as LinkedIn, Delicious, StumbleUpon and Furl Youtube, Flickr, and social networking services such as Facebook already enable learners to use their recommendation services for educational purposes along the way. Another learning and research-focused Web service that does not yet offer RSs but would very likely benefit tremendously from an integration of its functionalities is CiteULike.com, which promotes the sharing of scientific references among researchers and learners by providing possibilities for importing articles from repositories, automatically determining those articles' metadata, and allowing the personalized tagging of items, thereby enabling users to organize their libraries individually.

The strengths of RSs obviously lie in the possibility of significantly speeding up the process of discovering “quality” learning resources and helping learners to find peers with similar interests, learning preferences and appraisal and understanding of “quality” educational material. Based on the recommendations, RSs can potentially also support learners in connecting with other peers for a variety of reasons such as study-focused information exchange in communities of interest, practice, and knowledge or peer networks for peer-based methods of quality development and assurance. (Andersen et al. 2008).

### ***7.2.8 E-Portfolio Assessment***

E-Portfolios (EP), also referred to as “personal learning diaries” or “peer learning logs,” can be defined as learner-created and -centered products that provide individuals with a space to record and present information, which has been acquired during any form of education or training experience. An E-Portfolio is essentially an online collection of work consisting of any form of digital content (files, graphics, photos, curriculum vitas, or multimedia). E-Portfolios allow learners to demonstrate their growing competence by means of articulating their formal and informal learning experiences by collecting achievements and records. Furthermore, E-Portfolios are considered to facilitate assessment and reflection (Becta et al. 2007: 4), as they basically represent, and at the same time rely on, the learning processes they reflect. E-Portfolios for learning purposes are particularly appreciated for supporting learners in developing a variety of key skills, such as collecting, selecting, reflecting, sharing, collaborating, annotating, and presenting (JISC 2008a). Additionally, EPs are considered to support the transition to employment, as a side effect of other E-Portfolio-related processes (Strivens 2007).



Amplified by the rise of blogging Web sites and services, E-Portfolios have quickly become an inherent part of most modern learning environments and are a standard tool for most providers and practitioners of e-learning (Strivens 2007; Oradini and Saunders 2007).

In as much as E-Portfolios serve as institutional drivers and enablers; six purposes and fundamental learning abilities supported by the use of E-Portfolios can be identified (Martin 2008).

1. Capturing and storing evidence
2. Reflecting
3. Giving and receiving feedback
4. Planning and setting goals
5. Collaborating
6. Presenting to an audience

In agreement with the outlined shift from “Assessment of Learning” to “Assessment for Learning,” Barrett and Carney (2005) distinguish between two forms of E-Portfolios which are distinct in terms of purpose, design, and content:

1. Portfolios used for Assessment of Learning (AoL)
2. Portfolios used for Assessment of Learning (AfL)

From this perspective, Ehlers (2008: 21) draws a distinction between the use of EPS for (a) summative assessment and (b) formative assessment (see Table 7.10):

As this comparison illustrates, E-Portfolios satisfy essentially two purposes for learning. For one, they are innovative tools, supporting the learning process and secondly, they can, “*if used for formative assessment purposes, rather than summative evaluation, [...] be powerful devices for learning,*” and used as an instrument (see Fig. 7.3) that facilitates the assessment of its outcomes (Barrett and Carney 2005; Black and Wiliam 2005).

With reference to this it can be argued that the use of E-Portfolios re-emphasize that AfL adds a secondary purpose to the traditional understanding of assessment, which re-accentuates the shift from heteronomous, external and mostly test-based forms of AoL, towards more self-determined methods. This approach increasingly incorporates the learners’ perspectives and the focus on the comprehension and reflection of learning processes (Lucas 2007). Furthermore, the use of E-Portfolios focuses on building and establishing learners’ competencies, skills, and responsibilities and empowers them to be more adaptable and effective in their learning (Lucas 2007; JISC 2008b). Taking this into consideration, E-Portfolios close a crucial gap in terms of serving as link between teaching, learning, and assessment (Ehlers 2008: 22).

Additionally, and in terms of general planning and execution of the assessment of E-Portfolios, Atlay (2005) advises lecturers to take into consideration four key questions while planning and executing the assessment of E-Portfolios.

- What is the object of assessment: products or processes?
- Will the outcome be graded, and, if so, what form of grading is appropriate? Pass or fail?

**Table 7.10** Assessment of learning vs. assessment for learning with e-portfolios (Barrett and Carney 2005)

	Portfolios used for assessment of learning	Portfolios that support assessment for learning
Form of assessment	Summative assessment	Formative assessment
Purpose	Purpose of portfolio is prescribed by an institution	Purpose of portfolio is negotiated and agreed upon with learners
Artifacts	Artifacts predefined by institutions to determine the results of instruction	Artifacts are selected by learners (in agreement with lecturers) to display and reflect upon their learning progress
Timing	Usually developed at the end of a learning unit—and within a limited timeframe	Development and maintenance on an ongoing basis throughout the learning unit with a flexible timeframe
Application	Generation of a score or grade based on categories, criteria, and quantitative data to external audiences (potential use for high stake decisions)	Content gets reviewed by learners, their peers, and lecturers and used to provide feedback to improve learning (only very rarely used for high stake decisions)
Organization	Usually structured around a set of outcomes, goals or standards	Determined by learners themselves and negotiated with mentors, advisers, and teacher
Motivation	Extrinsic motivation required	Intrinsic motivation is fostered (engages the learner)
Audience	External (little or no choice)	learner, peers, family, friends (learners can choose)

- How will the results be weighted?
- How can it be integrated into existing systems and approaches of assessment?

Even though these advices cannot be applied directly to the use of EPs in combination with for instance self-reflection, it does outline the importance of preliminary considerations and additional supporting measures. Furthermore, it should be emphasized that agreeing upon the terms of publishing and exchange of data beforehand is strongly advisable in combined use of EPs with methods such as peer assessment (Ehlers 2008: 22).

In many cases simple and free weblog services such as blogger.com satisfy the basic requirements of managing and publishing basic content. Nevertheless popular online services such as PebblePad (<http://www.pebblelearning.co.uk>), LiveText.com, and E-Portfolio.org offer a significantly wider range of functions and allow for an incorporation of assessment, collaboration, and peer reflection based on E-Portfolios. Barrett (2008a, b) divides the variety of different E-Portfolio tools into two groups each containing three tool categories (see Table 7.11):

The most popular application of E-Portfolios are learning diaries, accompanying higher education institutions courses or other educational programs or training. For instance the “Prolog, Artificial Intelligence I” course at the higher education

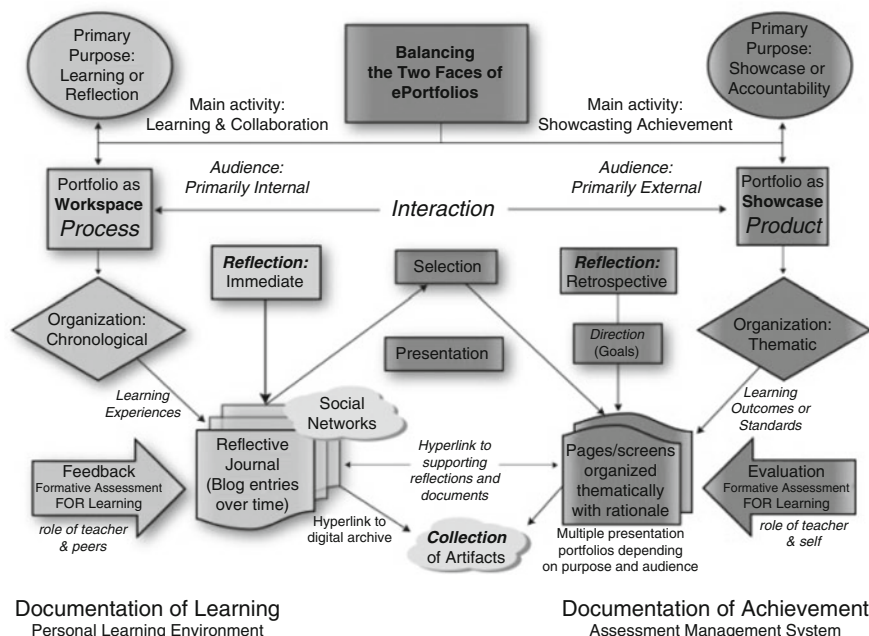


Fig. 7.3 Two faces of e-portfolios (cf. Barrett 2009)

institutions of Duisburg–Essen allows participants to keep a learning diary, while they are attending the course and solving the given exercises. These learn logs are, however, not publicly available and are accessed and assessed exclusively by the tutors. The benefit to the development and assessment of learning for the students mostly stems from the use of these EPs in combination with self-reflection. However, there is also an informal and formative assessment between the students and their tutors, which takes place over the period the whole course. At the end of the course, the material accumulated in the blogs is also assessed in a summative and formal fashion by the tutor. The result of these assessments, which are expressed as a pass or fail decision, influence the grade that the students receive in completing the course (Table 7.12).

The *E-Portfolio Portal*<sup>4</sup> of the pedagogic higher education institutions of St. Gallen (PHSG, Swiss) is another example for the use of EPs in an educational context. According to the associated website,<sup>5</sup> the service provided allows its users to create their own qualification profiles, generate different views for differing users or user groups, run various blogs, upload files, and create communities in order to socialize and maintain valuable contacts. Furthermore, the E-Portfolio Blog provides detailed information in the form of linked articles and incorporated

<sup>4</sup> <http://ping.phrblog.kaywa.ch/>

<sup>5</sup> <http://eportfolio-phsg.ning.com/>

Table 7.11 Categories of e-portfolio tools (Barrett 2007, 2008a, b)

Individual and institutional			Institutional		
Authoring tools	Static Web services	Interactive Web services	Software—server required	Hosted services	Assessment systems (hosted services)
mozilla composer	GeoCities	WordPress (blog)	Userland's Manila	Digication	TaskStream
Apple's iWeb	eFolio Minnesota	WikiSpaces	Blackboard	Think.com	College LiveText
Dreamweaver	Tripod	PB Wiki	Open Source tools:	nuVentive's iWebfolio	Chalk & Wire
FrontPage	Digication	GoogleDocs	Elgg, Mahara, OSPI,	PebblePad (U.K.)	FolioTek
nVu	KEEP Toolkit	Google Sites	ePEARL Embedded	Pupil Pages	nuVentive's TracDat
or any Web authoring tool	GooglePages	ZOHO Writer	in Moodle:	Epsilen	Richer Picture
			Moofolio, MyStuff (U.K.)	My eCoach	
Microsoft Office & Open Office: Word, Powerpoint & Lecshare Pro		EduSpaces (Elgg)	Open Source Content Management Systems:	GoogleApps for Education	
Adobe Acrobat			Plone		
MovieMaker2			Drupal		
PhotoStory3					
iMovie			Microsoft SharePoint		
Tools that can be used to author portfolios (offline), but require Web server space to publish online. Portfolios created with these tools can also be published on CD-R or DVD-R. No interactivity*	These are static Web services that an individual or institution may use to create and publish a presentation portfolio—little or no interactivity* (Web 1.0)	These are dynamic Web services that an individual or institution may use to create and publish a presentation portfolio AND allows interactivity* (Web 2.0)	These are systems that an institution would install on their own server to provide space for hosting portfolios. Interactivity* but NO data management system**	These are systems that an institution adopts (no server required) that host portfolios. Usually supports interactivity* but NO data management** or reporting systems	There are hosted systems that an institution would adopt (no server required) that will allow hosting portfolios, facilitates interactivity, and includes a data management** and reporting system for assessment
*Interactivity allows dialogue and feedback in the portfolio, either through comments or collaborative editing level of interactivity: lower <-----> higher					
**Data management system allows collection of evaluation data about portfolios and can produce reports aggregating quantitative data					
Level of personal expression and creativity for the portfolio developer: higher <-----> lower					

**Table 7.12** Comparison “e-Portfolio vs. online tests” (based on Hornung-Prähauser et al. 2007)

Characteristics	Online examinations	E-portfolio
Preparation	<ul style="list-style-type: none"> <li>• Excessive preparation for examiner</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive preparation for candidate</li> </ul>
Forms	<ul style="list-style-type: none"> <li>• Online multiple-choice test</li> <li>• Online tasks</li> <li>• Simulations (pilot examination)</li> </ul>	<ul style="list-style-type: none"> <li>• Project-related work with e-portfolio</li> <li>• E-Portfolios for purposes of planning one’s studies</li> </ul>
Materials assessed	<ul style="list-style-type: none"> <li>• Answers</li> </ul>	<ul style="list-style-type: none"> <li>• Studying/learning objectives, learning plans</li> <li>• Artifacts (materials, reports)</li> <li>• Reflections on learning</li> <li>• Feedback/comments by other evaluators</li> </ul>
Criteria for assessment	<ul style="list-style-type: none"> <li>• Correctness (agreement with sample solution)</li> <li>• Completeness</li> <li>• Oriented at criteria or norms</li> </ul>	<ul style="list-style-type: none"> <li>• Fulfilling criteria for evaluation (raster)</li> <li>• Perspective focused on competences</li> <li>• Focused on individuals</li> </ul>
Evaluation of tests	<ul style="list-style-type: none"> <li>• Fast</li> <li>• Objective</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive</li> <li>• Subjective (less so with several evaluators)</li> </ul>
Behavior of candidates	<ul style="list-style-type: none"> <li>• Rather passive testing of knowledge</li> </ul>	<ul style="list-style-type: none"> <li>• Active development of the portfolio’s contents</li> <li>• Inclusion of self-evaluation</li> </ul>

publications from various authors as a knowledgebase on the work with EPs in educational environments.

EPs are especially appreciated for their ease and independence of use, their versatility, extendibility, and the virtually endless possibilities for application and possible combinations with other collaborative approaches towards learning. Including E-Portfolios in the process of quality development can therefore serve various purposes.

The resulting multiple forms of application and possible combinations with additional supporting methods such as reflection, self-, or peer assessment make the instrument however highly appropriate within scenarios, which are based on technology-enhanced learning and peer production. For instance a combination with self-reflection allows the opportunity to assess and develop learning products and progress, without necessarily requiring the participation of any other stakeholders. As there is however neither a defined course of actions, (Conway 2005) nor are there any comprehensive standards, common formats or preferred mechanisms to present information, the greatest opportunities and strengths, such as freedom of application and use, as well as technology independence also indicate the instruments weaknesses. Accordingly the application of E-Portfolios, independent of whichever method used, demands mentoring and supervision in order to lead to fruitful results (Ehlers 2008: 22). As consequence Ehlers subsumes that E-Portfolios are instruments for development rather than for control.

### ***7.2.9 Rubrics as a Tool for Assessment: Also for Open-Learning Cultures***

Rubrics are frequently used today. They are a basic tool to communicate educators' expectations to students and allow educational professionals to give a structured and comparable feedback. Frequently when introduced to rubrics, teachers feel that this is exactly what they needed but also ask them if they can afford them time to apply rubrics to all grading procedures. A rubric is a scoring tool that lists the criteria for a piece of work. It also articulates gradations of quality for each criterion, from excellent to poor. Especially for open-learning cultures, when tools from the Web 2.0 sphere are used, learners are encouraged to actively endanger into discussions, create their own knowledge landscapes, or develop compilations of learning resources. For facilitators it is often helpful in advance to clarify the expectations they have towards students learning. For formal learning scenarios this is true but also for informal learning scenarios it is helpful for learners to use rubrics to reflect their learning experiences. There are many reasons to use rubrics (Goodrich 2001):

- Rubrics are powerful tools for both teaching and assessment. Rubrics can improve student performance, as well as monitor it, by making teachers' expectations clear and by showing students how to meet these expectations. The most common argument for using rubrics is that they help define "quality."
- Second, rubrics help students to become thoughtful judges of the quality of their own and others' work. When rubrics are used to guide self- and peer assessment, students become increasingly able to spot and solve problems in their own and one another's work. Repeated practice with peer assessment, and especially self-assessment, increases students' sense of responsibility.
- Third, rubrics reduce the amount of time teachers spend evaluating student work. Teachers tend to find that by the time a piece has been self- and peer assessed according to a rubric, they have little left to say about it. Rubrics provide students with more informative feedback about their strengths and areas in need of improvement. On the other hand they limit the feedback to the aspects that have been chosen relevant before being the facilitators of the learning activities.
- Fourth, rubrics are a great tool to use the same yardstick for measuring across a heterogeneous group of learners—this is especially useful in formal learning scenarios where learners are often judged against a common measure.

Rubrics are popular in grading processes today. In higher education they become more and more popular because they provide a methodology for more authentic, performance-based assessments. Examples of rubrics can not only be found in this chapter but also on the Internet in abundance. Rubrics can in general be subdivided into holistic rubrics, outlining broad criteria to assess complete learning outcomes and analytic rubrics, analyzing learning outcomes in terms of specific detailed criteria (Mertler 2001).

**Table 7.13** Example for as holistic rubric (based on Mertler 2001)

Score	Description
5	Demonstrates complete understanding of the problem. All requirements of task are included in response
4	Demonstrates considerable understanding of the problem. All requirements of task are included
3	Demonstrates partial understanding of the problem. Most requirements of task are included
2	Demonstrates little understanding of the problem. Many requirements of task are missing
1	Demonstrates no understanding of the problem
0	No response/task not attempted

Holistic rubrics are usually used when errors in some part of the process can be tolerated provided the overall quality is high (Chase 1999). Nitko (2001) further states that use of holistic rubrics is probably more appropriate when performance tasks require students to create some sort of response and where there is no definitive correct answer. The focus of a score reported using a holistic rubric is on the overall quality, proficiency, or understanding of the specific content and skills in a unidimensional way. Use of holistic rubrics usually results in a quicker scoring process than the use of analytic rubrics (Nitko 2001). However, only limited feedback is provided to the student as a result of scoring performance tasks in this manner. A template for holistic scoring rubrics is presented in Table 7.13.

Analytic rubrics are preferred when a focused response is required (Nitko 2001). In particular for performance tasks in which there may be one or two acceptable responses and creativity is not an essential feature of the students’ responses. Furthermore, analytic rubrics result initially in several scores, followed by a summed total score—their use represents assessment on a multidimensional level (Mertler 2001). As previously mentioned, the use of analytic rubrics can cause the scoring process to be slower, mainly because assessing several different skills or characteristics individually requires a teacher to examine the product several times. Both their construction and use can not only be more time consuming but also more precise and detailed in feedback for learners. Mertler (2001) stresses that as a rule of thumb, an individual’s work should be examined a separate time for each of the specific performance tasks or scoring criteria (Mertler 2001). Students receive specific feedback on their performance with respect to each of the individual scoring criteria—something that does not happen when using holistic rubrics (Nitko 2001). It is possible to then create a “profile” of specific student strengths and weaknesses (Mertler 2001). A template for analytic scoring rubrics is presented in Table 7.14.

Prior to designing a specific rubric, one would have to decide whether the performance or product will be scored holistically or analytically. Regardless of which type of rubric is selected, specific performance criteria and observable indicators must be identified as an initial step to development. The decision regarding the use of a holistic or analytic approach to scoring has several possible implications. The most important of these is that teachers must consider first how they intend to use the results. If an overall, summative score is desired, a holistic

**Table 7.14** Example for an analytic rubric (based on Mertler 2001)

	Beginning	Developing	Accomplished	Exemplary	Score
Criteria 1	Description reflecting beginning level of performance	Description reflecting movement towards mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance	
Criteria 2	Description reflecting beginning level of performance	Description reflecting movement towards mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance	
Criteria 3	Description reflecting beginning level of performance	Description reflecting movement towards mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance	
Criteria <i>n</i>	Description reflecting beginning level of performance	Description reflecting movement towards mastery level of performance	Description reflecting achievement of mastery level of performance	Description reflecting highest level of performance	

scoring approach would be more desirable. In contrast, if formative feedback is the goal, an analytic scoring rubric should be used. It is important to note that one type of rubric is not inherently better than the other—you must find a format that works best for your purposes (Mertler 2001).

One possible procedure to develop a rubric which is combined with principles of students' self-evaluation is the following step-by-step model (Goodrich 2001):

1. *Look at models*: Show students examples of good and less good work. Identify the characteristics that make the good ones good and the bad ones bad.
2. *List criteria*: Use the discussion of models to begin a list of what counts in quality work.
3. *Articulate gradations of quality*: Describe the best and worst levels of quality, and then fill in the middle levels based on your knowledge of common problems and the discussion of not-so-good work.
4. *Practice on models*: Have students use the rubrics to evaluate the models you gave them in Step 1.



5. *Use self- and peer assessment:* Give students their task. As they work as them in the process for one or two times to perform self- and peer assessments.
6. *Revise:* Always give students time to revise their work based on the feedback they get in Step 5.
7. *Use teacher assessment:* Use the same rubric students used to assess their work yourself.

The following tables give examples for possible rubrics to assess learners performance using twitter (see Table 7.15) or blogs (see Table 7.16).

## 7.3 Final Remarks on Assessment in Open-Learning Cultures

### 7.3.1 *Trust and Peer Reputation*

Even outside the educational context, there is no doubt that the emergence of Web 2.0 and the underlying people-empowering concepts imply significant issues and consequences concerning establishing and ensuring an adequate level of trust within peer communities, without disregarding the challenge of effectively protecting individuals' privacy and preserving the security within these communities. Since security and privacy issues have already been relatively well documented with accurately defined boundaries, enhancing trust within peer networks is probably one of the most important challenges facing the use of social information retrieval techniques for the purpose of enhancing the quality of and within EL 2.0 environments. In other words, as the control over quality development is increasingly shifting away from trusted sources of information towards often barely known acquaintances, or even entirely unknown individuals, it has become essential to evaluate "the signals" allowing us to distinguish between "good" and "bad" resources. As a matter of fact, computer security and social sciences disagree significantly about the nature of trust. It is, however, agreed across all domains that trust requires signals. Regarding the level of user interaction on the Web, and especially in EL 2.0 environments, these signals should ideally be impossible or at least very hard to falsify, and not require any form of training in their evaluation, whilst still providing sufficiently significant information to allow making an educated judgment about an individual and the value of its contributions to a network. It is essential to put efficient, scalable, informative, and non-oppressive or "easy to game" (Wales 2004) metrics of trust into place. A popular example of such a solution is the "reputation management" system known from Ebay, which establishes a user's reputation by allowing their members to rate trading partners with positive, negative or neutral feedback, and an additional line of 80 characters (Steiner 2003). Notwithstanding that learning-based networks certainly differ from EBay's transaction-

**Table 7.15** Example for a rubric on using twitter for teaching and learning (based on Franker 2010)

Element	Exemplary 3	Proficient 2	Partially proficient 1	Unsatisfactory 0	Points
Content	Original tweets consistently provide new resources or ideas that add value to the discussion	Most original tweets provide new resources or ideas that add value to the discussion	A few original tweets provide new resources or ideas that add value to the discussion	Original tweets do not provide any new resources or ideas and add no value to the discussion	___/3
Frequency	Tweets are creatively and succinctly written to stimulate dialogue and commentary	Most tweets are written to stimulate dialogue and commentary	A few tweets are written to stimulate dialogue and commentary	Tweets are poorly written and do not stimulate dialogue and commentary	___/3
	Exceeds the required number of tweets per week	Meets the required number of tweets per week	Falls just short of meeting the required number of tweets per week	Fails to meet the required number of tweets per week	___/3
	Creates and sends tweets more frequently than required	Creates and sends tweets as often as required	Creates and sends tweets somewhat less often than required	Creates and sends tweets too infrequently to meet the requirements	___/3
Hyperlinks	Tweets include accurate hyperlinks to resources that enhance the topic	Tweets include hyperlinks to resources relevant to the topic	Some tweets include hyperlinks, but not all resources are relevant to the topic	Tweets either contain no hyperlinks or selected resources have no relevance to the topic	___/3
	Effectively uses tiny URLs as needed to stay within the 140-character limit	Uses tiny URLs most of the time to stay within the 140-character limit	Inconsistently uses tiny URLs to stay within the 140-character limit	Does not use tiny URLs to shorten hyperlinks	___/3
	Selects hyperlinks representing the most current resources about the topic.	Usually selects hyperlinks that represent the most current resources about the topic	Hyperlinks connect to many out-of-date resources	Most or all hyperlinks connect to out-of-date resources	___/3
Mechanics	Writes with no errors in grammar, capitalization, punctuation, and spelling	Writes with minor errors in grammar, capitalization, punctuation, and spelling	Writes with major errors in grammar, capitalization, punctuation, and spelling (three or more errors per tweet)	Writes with numerous major errors in grammar, capitalization, punctuation, and spelling (More than five errors per tweet)	___/3

Comments and Contributions	Consistently responds to tweets with positive, respectful, and succinct comments while providing a meaningful addition to the discussion	Most responses to tweets are positive and respectful while providing a meaningful addition to the discussion	Some responses to tweets are negative and disrespectful and/or provide little value to the discussion	Responses to tweets are negative and disrespectful and provide no value to the discussion	____/3
	Re-tweets are appropriate for the assigned discussion topic and always include the source's Twitter username	Most re-tweets are appropriate for the assigned discussion topic and include the source's Twitter username	Re-tweets are often inappropriate for the assigned discussion topic and fail to include the source's Twitter username	Re-tweets are inappropriate for the assigned discussion topic and show little awareness of the purpose and etiquette of re-tweeting	____/3
Total points					____/30

**Table 7.16** Example for a rubric assessing a blog project (based on Franker 2010)

Element	Exemplary 3	Proficient 2	Partially proficient 1	Unsatisfactory 0	Points
Content and Creativity	Postings provide comprehensive insight, understanding, and reflective thought about the topic	Postings provide moderate insight, understanding, and reflective thought about the topic	Postings provide minimal insight, understanding, and reflective thought about the topic	Postings show no evidence of insight, understanding, or reflective thought about the topic	___/3
	Postings present a focused and cohesive viewpoint that is substantiated by effective supporting examples	Postings present a specific viewpoint that is substantiated by supporting examples	Postings present a specific viewpoint but lack supporting examples	Postings present no specific viewpoint and no supporting examples are provided	
	Postings are creatively and fluently written to stimulate dialogue and commentary	Postings are generally well written with some attempts made to stimulate dialogue and commentary	Postings are brief and unimaginative and reflect minimal effort to connect with the audience	Postings are written in a halfhearted, disjointed manner that reflects no awareness of effective communication	
Voice	Postings are written in a style that is appealing and appropriate for the intended audience and a consistent voice is evident throughout	Postings are written in a style that is generally appropriate for the intended audience and an attempt is made to use a consistent voice	Postings are written in a style that does not fully consider the audience, and the author's voice is difficult to identify	Postings are carelessly written with no attempt to consider the audience and no awareness of author voice	___/3
	Postings reflect the author's unique personality through expressive and carefully selected word choices that bring the topic to life	Postings reflect a bit of the author's personality through word choices that attempt to bring the topic to life	Postings reflect almost no personality and little attempt is made to use effective word choices to bring the topic to life	Postings are devoid of any personality; words used are trite and unexpressive	
Organization	Uses a consistent organizational structure that is easy to follow and places	Uses a generally consistent organizational structure,	Uses a loosely defined organizational structure that	Fails to provide a consistent organizational structure	___/3

Timeliness	the most recent posts at the top of the page Updates blog as often or more often than required; all posts are date-stamped	with the most current posting listed at the top Updates blog when required; most posts are date-stamped	shows minimal awareness of the need for consistency Updates blog when reminded; posts are often missing a date stamp	and shows no awareness of the need for consistency Fails to update blog within the required time frame	___/3
Mechanics	Writes with no errors in grammar, capitalization, punctuation, and spelling	Writes with minor editing errors in grammar, capitalization, punctuation, and spelling	Writes with major errors in grammar, capitalization, punctuation, and spelling (three or more errors)	Writes with numerous major errors in grammar, capitalization, punctuation, and spelling (more than five errors)	___/3
Text Layout	Effectively uses the blog software's text formatting capabilities to enhance the content's visual appeal and increase readability	Uses some of the blog software's text formatting capabilities to enhance the content's visual appeal and increase readability	Uses very few of the blog software's text formatting capabilities	Uses none of the blog software's text formatting capabilities	___/3
Hyperlinks	Includes links to relevant, up-to-date websites or documents that enhance the information presented in the blog postings	Includes links to websites or documents, but not all links enhance the information presented in the blog postings	Includes links to websites or documents that add little value to the information presented in the blog postings	Does not include any links, or the links selected are of poor quality and do not add any value to the information presented in the blog postings	___/3
Graphics and Multimedia	Selects and inserts high quality graphics and multimedia when appropriate to enhance and extend the content	Selects and inserts graphics and multimedia that are mostly high quality and enhance and clarify the content	Selects and inserts many low-quality graphics and multimedia which do not enhance the content	Does not insert any graphics, or uses only low-quality graphics and multimedia, which do not enhance the content	___/3
	Acknowledges all image and multimedia sources with captions or annotations	Acknowledges most image and multimedia sources with captions or annotations	Acknowledges only a few multimedia and image sources and uses incomplete captions or annotations	Fails to acknowledge any image or multimedia sources, either with a caption or an annotation	___/3

(continued)

**Table 7.16** (continued)

Element	Exemplary 3	Proficient 2	Partially proficient 1	Unsatisfactory 0	Points
Citation	Consistently uses standard bibliographic format to cite all sources, including direct quotations	Uses standard bibliographic format to cite sources most of the time	Does not use standard bibliographic format to cite sources, and citations are incomplete	Does not cite any sources	___/3
	Accurately cites all sources of information to support the credibility and authority of the opinions presented	Most sources are cited accurately and support the credibility of the opinions presented	Few sources are cited accurately, and they fail to adequately support the credibility of the opinions presented	Does not provide any accurate information about sources used	___/3
Comments and Contributions	Writes comments on other students' blog postings that are consistently positive, respectful, and succinct while providing a meaningful addition to the discussion	Writes comments on other students' blog postings that are generally positive, respectful, and add value to the discussion	Writes comments on other students' blog postings which often fail to show respect for other opinions	Writes openly disrespectful and negative comments on other students' blog postings	___/3
	Meets all goals and deadlines for posting comments on other students' blogs	Meets most goals and deadlines for posting comments on other students' blogs	Occasionally meets goals and deadlines for posting comments on other students' blogs	Does not meet goals and deadlines for posting comments on other students' blogs	___/3
Total points					___/48

based network of sellers and buyers, it can be argued that *retaliatory feedback* and *feedback extortion*, which have been identified as the key issues of the online auctioneer's system (Steiner 2003), are matters of concern for educational peer networks, too. It might be more beneficial, however, when integrated into learning networks if the mechanism is applied in the same manner as Google's NetTrust, which aims to leverage social trust for online trust, and accounts for history-based signals (implicit ratings) as well as signals based on manual interaction and comments (explicit ratings) (Camp 2008).

### **7.3.2 *Selecting a Peer That Fits!***

The challenge of identifying and selecting the most appropriate peers for particular topics, assignments and topics is closely related to the objective of establishing levels of trust and reputation among peers in a learning community.

Approaches to studying and implementing a supporting structure for this matter, range from binary, unidirectional network model-based analysis (Liu et al. 2005) to the development of an algorithm to determine peer reviewers (Rodriguez and Bollen 2008). However, both approaches are led by the idea of establishing a peer's reputation as a parameter in peer networks. Liu utilizes a weighted directional network model and establishes "PageRank" and "AuthorRank" as indicators of impact of individual sources and authors in a network. This represents a perspective on co-authorship networks that validates and accounts for the amount and nature of participation of its members within a given period. Rodriguez and Bollen, on the other hand, present an algorithm which attempts to automatically determine the most appropriate reviewers by analyzing co-authorship network data structures based on a relative-rank particle-swarm algorithm that claims to automatically identify conflicts of interest between involved parties without any human intervention. The fact that the latter approach is not limited to a preselected set of referees, and allows for weighting each referee with respects to their expertise in the domain makes it especially applicable to open commentary peer-review systems.

### **7.3.3 *Comparison of Assessment Methodologies: Strength and Weaknesses***

All assessment methods for open-learning cultures as they have been presented and discussed have their pros and cons in everyday application however there is no such thing like the one and only assessment method, the golden-bullet solution. It is in

**Table 7.17** Summary of strength and weaknesses of reflection for E-Assessment 2.0

	Strength	Weakness
Self-peer reflection	<ul style="list-style-type: none"> <li>• Flexible and creative</li> <li>• Allows for many combinations with other approaches</li> <li>• High potential for informal learning</li> <li>• Can be applied without any peer involvement (self-reflection only)</li> <li>• Allows for continuous application</li> </ul>	<ul style="list-style-type: none"> <li>• Less self-contained approach low peer involvement (self-reflection only)</li> <li>• Low comparability</li> <li>• In itself low applicability for assessment esp. formal high complexity</li> </ul>
Peer review (traditional)	<ul style="list-style-type: none"> <li>• Highly self-contained approach</li> <li>• Based on well-defined (strict) process</li> <li>• High degree of formality (comparability)</li> <li>• High potential for product-driven quality assessment</li> <li>• Application possible with few participants</li> <li>• Low complexity</li> <li>• Degree of reflection (even though low) very qualified</li> <li>• Less room for bias, prejudices, groupthink</li> </ul>	<ul style="list-style-type: none"> <li>• Less collaborative</li> <li>• Low applicability for process-driven assessment</li> <li>• Low involvement of peers</li> <li>• Low degree of reflection</li> <li>• Less development oriented</li> <li>• Low degree of reflection (even though low) very qualified</li> </ul>
Peer review (topical)	<ul style="list-style-type: none"> <li>• Increased potential for process-driven assessment</li> <li>• Allows for greater numbers of involved peers</li> <li>• Increased potential for collaboration and peer production</li> <li>• Medium degree of complexity</li> <li>• More development oriented</li> </ul>	<ul style="list-style-type: none"> <li>• Less self-contained approach process less well defined and - established</li> <li>• Low degree of formality</li> <li>• Low degree of comparability</li> <li>• Generally less applicable for assessment</li> <li>• Increased room for bias, prejudices, groupthink, etc.</li> <li>• High complexity</li> </ul>
Peer assist	<ul style="list-style-type: none"> <li>• Application of approach is flexible and extendable</li> <li>• Allows for many combinations with other approaches</li> <li>• Flexible and creative approach</li> <li>• Focus on summative and process-driven quality development</li> <li>• Continuous application possible,</li> <li>• High degree of collaboration</li> <li>• Supports reflection</li> <li>• Complex approach</li> <li>• High potential for peer production scenarios</li> </ul>	<ul style="list-style-type: none"> <li>• Low comparability</li> <li>• Less applicable for assessment purposes</li> <li>• Less applicable for product-based use</li> <li>• Rather complex</li> </ul>
Self-, and peer assessment/self-evaluation	<ul style="list-style-type: none"> <li>• Rather simple approach, with a defined course of action, without any other learner being involved (except a possible definition of assessment criteria with a group discussion/process)</li> </ul>	<ul style="list-style-type: none"> <li>• Quality Development can only be produced indirectly, as the process itself only assess quality</li> </ul>

(continued)



**Table 7.17** (continued)

	Strength	Weakness
Social recommendation	<ul style="list-style-type: none"><li>• Allows for many combinations with other approaches</li><li>• Continuous application possible applicable for product-based and process-based assessment purposes</li><li>• Strong focus on assessing quality</li><li>• Low complexity</li></ul>	<ul style="list-style-type: none"><li>• Allows for many combinations with other approaches continuous application possible</li><li>• Applicable for product-based and process-based assessment purposes</li><li>• Strong focus on assessing quality</li><li>• Low complexity</li></ul>
E-Portfolio	<ul style="list-style-type: none"><li>• Application of approach is very flexible and extendable allows for many combinations with other approaches continuous application possible</li><li>• Applicable for summative and formative assessment purposes</li><li>• Applicable for product-based and process-based assessment purposes</li><li>• Strong focus on quality development</li><li>• Collaboration possible</li><li>• Supports reflection</li><li>• Low complexity</li></ul>	<ul style="list-style-type: none"><li>• Requires combination with other approach</li><li>• Comparability rather low</li><li>• Less potential for peer production scenarios</li></ul>

that spirit that the following table just tries to summarize some characteristics of the presented methods (Table 7.17)

# Abbreviations

ASTD	American Society for Training & Development
EL	E-Learning
EP	E-Portfolio
CAA	Computer-assisted assessment
ICT	Information and Communication Technology
JISC	Joint Information Systems Committee
LO	Learning object
ODL	Open and distance learning
OLE	Online-learning environments
OSSD	Open source software development
QA	Quality assurance
QAS	Quality assessment
QD	Quality development
QE	Quality evaluation
QM	Quality management
RSS	Really simple syndication
TEL	Technology-enhanced learning
URI	Unique resource identifier
URL	Unique resource location
UGC	User-generated content
WSL	Web-supported learning

# Definitions

The following definitions are commonly accepted and should be a useful point of reference throughout the book.

- **Quality assurance:** The means by which an institution can guarantee with confidence and certainty that the standards and quality of its educational provision are being maintained and enhanced.
- **Quality control:** Quality control refers to the verification procedures (both formal and informal) used by institutions in order to monitor quality and standards to a satisfactory standard and as intended.
- **Quality enhancement:** Quality enhancement is the process of positively changing activities in order to provide for a continuous improvement in the quality of institutional provision.
- **Quality assessment:** Quality assessment is the process of external evaluation undertaken by an external body of the quality of educational provisions in institutions, in particular the quality of the student experience.
- **Quality audit:** Quality audit is the process of examining institutional procedures for assuring quality and standards and whether the arrangements are implemented effectively and achieve stated objectives. The underlying purpose of Continuation Audit is “to establish the extent to which institutions are discharging effectively their responsibilities for the standards of awards granted in their name and for the quality of education provided to enable students to attain standards.”
- **Standards:** Standards describe levels of attainment against which performance may be measured. Attainment of a standard usually implies a measure of fitness for a defined purpose.
- **Quality culture:** Quality culture is the creation of a high level of internal institutional quality assessment mechanisms and the ongoing implementation of the results. Quality Culture can be seen as the ability of the institution,

program, etc., to develop quality assurance implicitly in the day-to-day work of the institution and marks a move away from periodic assessment to ingrained quality assurance.

- **Accreditation:** Accreditation is the result of a review of an education program or institution following certain quality standards agreed on beforehand. It's a kind of recognition that a program or institution fulfills certain standards.

# References

- Adelsberger, H., Ehlers, U. -D., & Schneckenberg, D. (2007). "Stepping up the Ladder", competence development through E-learning. *Proceedings of the World Conference on Educational Media ed-media*, Vienna.
- Adomavicius, G., & Tuzhilin, A. (2005). Toward the next generation of recommender systems: A survey of the state-of-the-art and possible extensions. *IEEE Transactions on Knowledge and Data Engineering*, 17(6), 734–749. Retrieved June 28, 2009, from <http://www.inf.unibz.it/~ricci/ATIS/papers/state-of-the-art-2005.pdf>
- Alavi, M., & Leidner, D. E. (2001). Review: Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, 25(1), 107–136.
- Albrecht, D. (2005). Competency management – can we deliver on the promises we made? Proceedings of 2nd International SCIL Congress. St.Gallen: Swiss Centre for Innovations in Learning (SCIL).
- Albrecht, S., Hartig-Perschke, R., & Lübcke, M. (2007). Weblog-Kommunikation und Öffentlichkeit. Eine Untersuchung am Beispiel des Bundestagswahlkampfes 2005. In K. S. Rehberg (Hg.), *Die Natur der Gesellschaft. Verhandlungen des 33. Kongresses der Deutschen Gesellschaft für Soziologie in Kassel 2006*. CD-ROM. Frankfurt.
- Allen, E., & Seaman, J. (2007). *Online nation. Five years of growth in online learning*. New York: The Sloan Consortium.
- Andersen, R., Borgs, C., Chayes, J., Feige, U., Flaxman, A., Kalai, A., Mirokni, V., & Tennenholtz, M. (2008). *Trustbased recommendation systems: An axiomatic approach*. Retrieved June 29, 2009, from <http://research.microsoft.com/en-us/um/people/borgs/papers/trust.pdf>
- Anderson, P. (2007). What is Web 2.0? Ideas, technologies and implications for education. In *JISC Technology and Standards Watch*. Retrieved June 28, 2009, from <http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf>
- Antonacci, D., & Modaress, N. (2005). *Second life: The educational possibilities of a Massively Multiplayer Virtual World (MMVW)*. Paper presented at the EDUCAUSE Southwest Regional Conference, Austin, Texas. Retrieved January, 10, 2007, from [www2.kumc.edu/tlt/SLEUCAUSESW2005/SLPresentationOutline.htm](http://www2.kumc.edu/tlt/SLEUCAUSESW2005/SLPresentationOutline.htm)
- Arnold, R. (1997). Qualität durch Professionalisierung – zur Durchmischung von Utilität und Zweckfreiheit in der Qualität betrieblicher Weiterbildung. In Ders (Ed.), *Qualitätssicherung in der Erwachsenenbildung* (pp. 51–61). Opladen: Leske und Budrich.
- Arnold, R., & Wieckenberg, U. (1999). *Qualitätsverständnis und Qualitätssicherung bei kirchlichen Trägern der Erwachsenenbildung*, Heft Nr. 6. Kaiserslautern: Pädagogische Materialien der Universität Kaiserslautern.
- Atkins, D. E., Brown, J. S., & Hammond, A. L. (2007). *A review of the open educational resources (OER) movement: Achievements, challenges, and new opportunities*. <http://www.oerderserves>.

- [org/wp-content/uploads/2007/03/a-review-of-the-open-educational-resources-oer-movement\\_final.pdf](#), Abruf am 2009-12-18.
- Atlay, M. (2005). PDP: To assess or not to assess? The centre for recording achievement, *PDP-UK, Newsletter*, 3, 5.
- Attwell, (2004). How can ICT supported learning lead to knowledge development? Retrieved from <http://www.know-2.org/index.cfm>
- Attwell, G., Dirckinck-Holmfeld, L., Fabian, P., Kárpáti, P., & Littig, P. (Eds.). (2005). *E-learning in Europe. Results and recommendations*. Bonn: BIBB.
- Attwell, G. (2007). *E-learning 2.0 and quality*. Pontydysgu. Retrieved December 10, 2008, <http://blip.tv/file/328583>
- Baethge, M., & Baethge-Kinsky, V. (2002). Arbeit - die zweite Chance. Zum Verhältnis von Arbeitserfahrungen und lebenslangem Lernen. In *Kompetenzentwicklung 2002, - Auf dem Weg zu einer neuen Lernkultur* (pp. 69–136). Münster: Arbeitsgemeinschaft Betriebliche Weiterbildungsforschung.
- Balli, C., Krekel, E. M., & Sauter, E. (2002). Qualitätsentwicklung in der Weiterbildung aus der Sicht von Bildungsanbietern – Diskussionsstand, Verfahren, Entwicklungstendenzen. In C. Balli, E. M. Krekel, & E. Sauter (Eds.), *Qualitätsentwicklung in der Weiterbildung – Zum Stand der Anwendung von Qualitätssicherungs- und Qualitätsmanagementsystemen bei Weiterbildungsanbietern* (pp. 5–24). Bonn: Bundesinstitut für Berufsbildung.
- Barnett, B. G., & O'Mahony, G. R. (2006). Developing a culture of reflection: Implications for school improvement. *Reflective Practice*, 7(4), 499–523. doi:10.1080/14623940600987130.
- Barrett, H. (2007). *Categories of ePortfolio tools*. Retrieved January 31, 2011, from <http://electronicportfolios.org/categories.html>
- Barrett, H. (2008). "NECC 2008 update" *electronic portfolios for learning blog*. Retrieved April 13, 2009, from <http://electronicportfolios.org/blog/2008/07/necc-2008-update.html>
- Barrett, H. (2008). *Categories of ePortfolio tools*. Retrieved June 30, 2009, from <http://electronicportfolios.org/categories.html>
- Barrett, H. (2009). *Balancing the two faces of ePortfolios*. Retrieved June 30, 2009, from <http://electronicportfolios.org/balance/index.html>
- Barrett, H., & Carney, J. (2005). *Conflicting paradigms and competing purposes in electronic portfolio development*. Western Washington University. Retrieved June 30, 2009, from <http://electronicportfolios.com/portfolios/LEAJournal-BarrettCarney.pdf>
- Bates, A. (2000). *Managing technological change: Strategies for college and higher education institutions leaders*. San Francisco: Jossey-Bass.
- Battelle, J. (2003). The database of intentions. In *Thoughts on the intersection of search, media, technology, and more*. Retrieved September 9, 2008, from <http://battellemedia.com/archives/000063.php>
- Baumgartner, P. (1993). *Der Hintergrund des Wissens. Vorarbeiten zu einer Kritik der programmierbaren Vernunft*. Universität Klagenfurt.
- Baumgartner, P., & Payr, S. (1997). Erfinden lernen. In K. H. Müller & F. Stadler (Eds.), *Konstruktivismus und Kognitionswissenschaft. Kulturelle Wurzeln und Ergebnisse. Zu Ehren Heinz von Foerstes* (pp. 89–106). Wien: Springer.
- Baumgartner, P., & Welte, H. (Eds.). (2002). *Reflektierendes Handeln - Beiträge zur Wirtschaftspädagogik*. Innsbruck-Wien: StudienVerlag.
- Baumgartner, P. (2007). *Zen and the Art of teaching. Communication and interaction in education, Hagen*. Retrieved May 17, 2007, from <http://bt-mac2.fernuni-hagen.de/peter/gems/zenartof-teaching.pdf>
- Beckett, D., & Hager, P. (2002). *Life, work and learning: Practice in postmodernity*. London: Routledge.
- Becta, Learning Sciences Research Institute at The Higher education institutions of Nottingham, & Hartnell-Young, E. (2007). *The impact of e-portfolios on learning*. Retrieved June 29, 2009, from [http://partners.becta.org.uk/upload-dir/downloads/page\\_documents/research/impact\\_eportfolios\\_learning.pdf](http://partners.becta.org.uk/upload-dir/downloads/page_documents/research/impact_eportfolios_learning.pdf)

- Bell, D. (1973). *The coming of post-industrial society. A venture in social forecasting*. New York: Basic Books.
- Bell, R. M., & Koren, Y. (2007). *Improved neighborhood-based collaborative filtering*. Retrieved June 29, 2009, from <http://public.research.att.com/~volinsky/netflix/cfworkshop.pdf>
- Benkler, Y. (2005). Common wisdom: Peer production of educational materials. Available at: [www.benkler.org/Common\\_Wisdom.pdf#search=%22%E2%80%9CCommon%20Wisdom%3A%20Peer%20Production%20of%20Educational%20Materials%E2%80%9D%2C%20%22](http://www.benkler.org/Common_Wisdom.pdf#search=%22%E2%80%9CCommon%20Wisdom%3A%20Peer%20Production%20of%20Educational%20Materials%E2%80%9D%2C%20%22)
- Benkler, Y. (2006). *The wealth of Networks*. New Haven, CT: Yale Higher Education Institutions Press. Retrieved June 29, 2009, from [http://www.benkler.org/Benkler\\_Wealth\\_Of\\_Networks.pdf](http://www.benkler.org/Benkler_Wealth_Of_Networks.pdf)
- Benkler, Y. (2006a). *The wealth of networks*. New Haven, CT: Yale University Press.
- Berkel, K. (1987). Zur Sozialpsychologie des Konflikts in Organisationen. In J. Schulz-Gambard (Hrsg.), *Angewandte Sozialpsychologie: Konzepte, Ergebnisse, Perspektiven* (S. 153–167). München-Weinheim.
- Berkel, I. (1998). *Die Rolle der Organisationsentwicklung im Dienstleistungsqualitätsmanagement: Dargestellt am Beispiel einer Kundenbefragung im Privatkundengeschäft*. Munich.
- Berners-Lee, T., & Fischetti, M. (1999). *Weaving the Web: The original design and ultimate destiny of the World Wide Web by its inventor*. Britain: Orion Business. ISBN 0-7528-2090-7.
- Berners-Lee, T., Hendler, J., & Lassila, O. (2001, May). The semantic web. *Scientific American*, 284(5), 34–43.
- Bertzeletou, T. (2003). *Accreditation bodies*. Retrieved September 29, 2008, from <http://cedefop.communityzero.com/content?go=199198&cid=161784>
- Birdi, K. S. (2005). No idea? Evaluating the effectiveness of creativity training. *Journal of European Industrial Training*, 29(2), 102–111.
- Black, P., Harrison, C., Lee, C., Marshall, B., & Wiliam, D. (2003). *Assessment for learning: Putting It into practice*. New York: Open Higher Education Institutions Press.
- Black, P., & Wiliam, D. (2005). The formative purpose: Assessment must first promote learning. In M. Wilson (Ed.), *Towards coherence between classroom assessment and accountability*. Chicago, IL: The Higher Education Institutions of Chicago Press.
- Black, P., & Wiliam, D. (2006). Developing a theory of formative assessment. In J. Gardner (Ed.), *Assessment and Learning* (pp. 9–26). London: Sage.
- Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability*, 21, 5–31.
- Bostock, S. (2004). *Student peer assessment, learning technology*. Retrieved June 30, 2009, from [http://www.keele.ac.uk/depts/aa/landt/lt/docs/bostock\\_peer\\_assessment.htm](http://www.keele.ac.uk/depts/aa/landt/lt/docs/bostock_peer_assessment.htm)
- Bötel, C., Seusing, B., & Behrenschorf, B. (2002). Qualitätssicherungs- und Qualitätsmanagementsysteme bei Weiterbildungsanbietern: Ergebnisse der CATI-Befragung. In C. Balli, E. M. Krekel, & E. Sauter (Eds.), *Qualitätsentwicklung in der Weiterbildung – Zum Stand der Anwendung von Qualitätssicherungs- und Qualitätsmanagementsystemen bei Weiterbildungsanbietern* (pp. 25–44). Bonn: Bundesinstitut für Berufsbildung.
- Böttcher, J. V. (2006). The rise of student performance content, Campus Technology. Retrieved from <http://campustechnology.com/Articles/2006/02/The%20Rise%20of%20Student%20Performance%20Content.aspx>
- Bötel, C., & Krekel, E. M. (2004). Trends und Strukturen der Qualitätsentwicklung bei Bildungsträgern. In C. Balli, E. M. Krekel, & E. Sauter (Eds.), *Qualitätsentwicklung in der Weiterbildung – Wo steht die Praxis?* (pp. 19–40). Bielefeld: Bertelsmann.
- Botkin, W. J., & Mahdi, M. E. (1979). *No limits to learning: Bridging the human gap*. New York: Pergamon Press.
- Boud, D. (1991). *Implementing student self-assessment* (2nd, Rev. ed.). Sydney: Herdsa.
- Boud, D. (1994). The move to self-assessment: Liberation or a new mechanism for oppression. *Conference Proceedings*, 10–13, SCUTREA 1997. Retrieved June 30, 2009, from <http://www.leeds.ac.uk/educol/documents/00002954.htm>
- Boyatzis, R. E. (1982). *The competent manager: A model for effective performance*. New York, NY: Wiley.

- Boyatzis, R., McKee, A., & Johnston, F. (2008). *Becoming a Resonant Leader: Develop Your Emotional Intelligence, Renew Your Relationships, Sustain Your Effectiveness*. Boston: Harvard Business Press Books.
- Bremer, C., Hildebrand, T., & Binet, O. (2002). Hochschulstrategie und Implementierung. Modernisierung der Lehre: Organisation, Integration und Widerstände. In G. Bachmann, O. Haefeli, & M. Kindt (Hrsg.), *Campus 2002: Die virtuelle Hochschule in der Konsolidierungsphase*. Münster.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32–42.
- Brown, J. S. (1999). Sustaining the ecology of knowledge. *Leader to Leader*, Spring(12), 31–36.
- Bruns, A. (2007). Prodsusage: Towards a broader framework for user-led content creation. *Proceedings Creativity & Cognition 6*, Washington, DC.
- Bühl, W. L. (1995). *Wissenschaft und Technologie. An der Schwelle zur Informationsgesellschaft*. Göttingen.
- C4LPT Centre for Learning and Performance Technologies. (2009). *Knowledge, skills and tools for the learning 2.0 age. A guide to social learning. What is social learning?* Retrieved June 28, 2009, from <http://c4lpt.co.uk/sociallearning/sociallearning.html#retrieved>
- Calvani, A., Bonaituti, G., Fini, A., & Ranieri, M. (2006). *Towards technology enhanced learning 2.0: New paths for informal learning and lifelong learning*. Retrieved October 16, 2008, from <http://www.slideshare.net/anto/towards-elearning-20-new-paths-for-informal-learning-and-lifelong-learning>
- Cambra-Berdún, J., & Cambra-Fierro, J. J. (2006, December). Considerations and implications on the necessity of increasing efficiency in the public education system: The new public management (NPM) and the market orientation as reference concepts. *International Review on Public and Nonprofit Marketing*, 3(2), 41–58.
- Carneiro, R., Lefrere, P., Steffens, K., & Underwood, J. (Eds.). (2010). *Self-regulated learning in technology enhanced learning environments: A European perspective*. Rotterdam: Sense.
- Centre for Educational Research and Innovation. (2007). *Giving knowledge for free: The emergence of open educational resources*. <http://www.oecd.org/dataoecd/35/7/38654317.pdf>, Abruf am 2009-12-16.
- Chen, N.-S., Wei, C.-W., Wu, K.-T., & Uden, L. (2009). Effects of high level prompts and peer assessment on online learners' reflection levels. *Computers in Education*, 52(2), 283–291.
- Colley, H., Hodgkinson, P., & Malcolm, J. (2002). *Non-formal learning: Mapping the conceptual terrain, a consultation report*. Retrieved 13 November 2006, from [http://www.infed.org/archives/etexts/colley\\_informal\\_learning.htm](http://www.infed.org/archives/etexts/colley_informal_learning.htm)
- Collison, C., & Parcell, G. (2001). *Learning to fly – practical knowledge management from leading and lerning organisations by Chris Collison and Geoff Parcell*. Oxford: Capstone.
- Conole, G., & McAndrew, P. (2010). A new approach to supporting the design and use of OER: Harnessing the power of web 2.0. In M. Edner & M. Schiefner (Eds.), *Looking toward the future of technology enhanced education: Ubiquitous learning and the digital nature*. Hershey: IGI Global.
- Conway, F. (2005, March). Electronic portfolios and dimensions of learning. *The Journal*. Retrieved June 28, 2009, from <http://thejournal.com/articles/2005/03/01/electronic-portfolios-and-dimensions-of-learning.aspx>
- Cook-Sather, A. (2008). What you get is looking in a mirror, only better: Inviting students to reflect (on) college teaching. *Reflective Practice*, 9(4), 473–483. doi:10.1080/14623940802431465.
- Cope, B., & Kalantzis, M. (Eds.). (2000). *Multiliteracies: Literacy learning and the design of social futures*. New York: Routledge.
- Cowan, J. (1998). *On becoming an innovative higher education institutions teacher reflection in action*. Milton Keynes: Open Higher Education Institutions Press.
- Cross, J. (2001). *How people learn. Internet time blog*. Retrieved December 14, 2008, from <http://www.internettime.com/blog/archives/000023.html>
- Cross, J. (2003). *Informal learning - the other 80%. Internet Time Group*. <http://www.internettime.com/Learning/The%20Other%2080%25.htm>



- Cross, J. (2005a). *Internet time group, Internet time blog*. Retrieved June 30, 2009, from <http://metatime.blogspot.com/2005/09/remix.html>
- Cross, J. (2005b). *Internet time group, internet time blog. George Siemens & Connectivism*. Retrieved November 12, 2008, from <http://metatime.blogspot.com/2005/10/george-siemens-connectivism.html>
- Cross, J. (2007). *Informal Learning: Rediscovering the natural pathways that inspire innovation and performance*. San Francisco, CA: Pfeiffer.
- Curtz, T. (1994). *Teaching self-assessment*. Retrieved June 30, 2009, from <http://www.evergreen.edu/washcenter/resources/acl/e1.html>
- Danish Evaluation Institute. (2003). *Quality procedures in European higher education: An ENQA survey* (ENQA Occasional Papers 5). Retrieved September 30, 2008, from <http://www.enqa.net/files/procedures.pdf>
- Danziger, K. (1980). The history of introspection reconsidered. *Journal of the History of the Behavioral Sciences*, 16(3), 241–262. doi:10.1002/1520-6696(198007)16:3<241::AID-JHBS2300160306>3.0.CO;2-O.
- Daudelin, M. W. (1996). Learning from experience through reflection. *Organizational Dynamics*, 24(3), 36–48.
- Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Cambridge, MA: Harvard Business School Press.
- De Vries, P., Veen, W., & Veenings, C. (2008). Networked learning in a multinational company: An innovative approach to collaborative learning. *Conference Proceedings EDMedia 2008*. Vienna.
- Deepwell, F. (2007). Embedding quality in technology enhanced learning implementation through evaluation. *Educational Technology and Society*, 10(2), 34–43.
- Deitering, F. (1996). Selbstgesteuertes Lernen. In S. Greif & H.-J. Kurtz (Eds.), *Handbuch Selbstorganisiertes Lernen* (2nd ed.). Göttingen: Verlag für Angewandte Psychologie.
- Dembski, M., & Lorenz, T. (1995). Zertifizierung von Qualitätsmanagementsystemen bei Bildungsträgern. Renningen-Malmsheim.
- Dewey, J. (1933). *How we think*. Buffalo, NY: Promethues Books.
- Dieberger, A. (1999). Social navigation in populated information spaces. In A. Munro, K. Höök, & D. Benyon (Eds.), *Social navigation of information space* (pp. 35–54). London: Springer.
- Dieberger, A. (2001, March 31–April 05). *Social connotations of space in the design for virtual . . . on Human factors in computing systems*. Washington: Seattle.
- Dieberger, A., Höök, K., Svensson, M., & Lönnqvist, P. (2001). *Social Navigation Research Agenda*. [http://people.dsv.su.se/~peterl/publications/chi\\_2001\\_short\\_paper.pdf](http://people.dsv.su.se/~peterl/publications/chi_2001_short_paper.pdf)
- Dieberger, A., Paul, D., Kristina, H., Paul, R., & Wexelblat, A. (2000). Social navigation: Techniques for building more usable systems. *Interactions*, 7, 36–45.
- Ditton, H. (2000). Qualitätskontrolle und -sicherung in Schule und Unterricht. Ein Überblick zum Stand der empirischen Forschung. In A. Helmke, W. Hornstein, & E. Terhart (Eds.), *Qualität und Qualitätssicherung im Bildungsbereich*. Weinheim: Beltz.
- Dixon, N. M. (2000). *Peer assist, guidelines for practice*. Retrieved June 30, 2009, from [http://www.commonknowledge.org/userimages/resources\\_peer\\_assist\\_guidelines+.pdf](http://www.commonknowledge.org/userimages/resources_peer_assist_guidelines+.pdf)
- Dohmen, G. (2001). *Das informelle Lernen. Die internationale Erschließung einer bisher vernachlässigten Grundform menschlichen Lernens für das lebenslange Lernen aller*. Bonn: Bundesministerium für Bildung und Forschung.
- Donabedian, A. (1980). *Explorations in quality assessment and Monitoring*. Ann Arbor: Health Administration Press.
- Downes, S. (2005, October). Technology enhanced learning 2.0. In: *eLearn Magazine*. Retrieved June 29, 2009, from <http://www.downes.ca/post/31741>
- Downes, S. (2006a). *Learning networks and connective knowledge*. Retrieved December 20, 2008, from <http://it.coe.uga.edu/itforum/paper92/paper92.html>
- Downes, S. (2006b). *The form of informal*. Retrieved December 20, 2008, from <http://halfanhour.blogspot.com/2006/12/form-of-informal.html>

- Downes, S. (2007). *Web 2.0 and your own learning and development*. Retrieved November 07, 2007, from <http://www.downes.ca/>
- Downes, S. (2007). E-learning 2.0. In development. Retrieved December 18, 2007, from <http://www.slideshare.net/Downes/elearning-20-in-development>
- Drachsler, H., Hummel, H. G. K., & Koper, R. (2009). Identifying the goal, user model and conditions of recommender systems for formal and informal learning. *Journal of Digital Information*, 10(2), 4–24. <http://journals.tdl.org/jodi/article/view/442/279>. Retrieved on 2013-07-01.
- Drachsler, H., Hummel, H. G. K., Van den Berg, B., Eshuis, J., Waterink, W., Nadolski, R. J., et al. (2009). Effects of the ISIS Recommender System for navigation support in self-organised Learning Net-works. *Journal of Educational Technology and Society*, 12(3), 122–135.
- Drucker, P. (1969). *The age of discontinuity. Guidelines to our changing society*. New York: Harper and Row.
- Drucker, P. F. (1992). *Managing for the future*. Oxford: Butterworth-Heinemann.
- Dutton, W.H., & Helsper, E.J. (2007) Oxford Internet survey 2007 report: The Internet in Britain. Oxford: Oxford Internet Institute, University of Oxford.
- Duval, E. (2006). *LearnRank: Towards a real quality measure for learning handbook on quality and standardisation in e-learning, Part C* (pp. 457–463). New York: Springer. doi:10.1007/3-540-32788-6\_30.
- Eaton, J. S. (2003). Before you bash accreditation, consider the alternatives. *The Chronicle of Higher Education*, 49(25). Retrieved September 30, 2008 <http://chronicle.com/weekly/v49/i25b01501.htm>
- EDUCAUSE “7 Things You Shuld Know About Series” <http://www.educause.edu/7Things>
- Ehlers, U. D. (2003). *Qualität beim E-Learning. Empirische Grundlegung und Modellkonzeption einer subjektorientierten Qualitätsentwicklung*. Dissertation, Bielefeld, p. 47.
- Ehlers, U. D. (2004). Quality in e-learning from a learner's perspective. *European Journal of Open, Distance and E-Learning*, 1. Retrieved from <http://www.eurodl.org/index.php?tag=120&article=230&article=101>
- Ehlers, U. D., & Pawlowski, J. M. (2004). E-Learning-quality: a decision support model for European quality approaches. In Fietz, Gabriele, Godio, Christina, Mason, & Robin (Eds.), *eLearning für internationale Märkte. Entwicklung und Einsatz von eLearning in Europa*. Bielefeld: Bertelsmann.
- Ehlers, U. D., Hildebrandt, B., Pawlowski, J. M., & Teschler, S. (2004, March 3). Metadaten zur Analyse und Auswahl von Qualitätsansätzen für Aus- und Weiterbildung. *Proceedings of Multiconference Wirtschaftsinformatik at the Higher education institutions of Duisburg-Essen*, Essen.
- Ehlers, U.-D. (2004a). Heterogenität als Grundkonstante erziehungswissenschaftlicher Qualitätsforschung. Partizipative Qualitätsentwicklung im E-Learning. In W. Bos, E.-M. Lankes, N. Plafmeier, & K. Schwippert (Eds.), *Heterogenität. Eine Herausforderung an die empirische Bildungsforschung*. Münster: Waxmann Verlag.
- Ehlers, U.D. (2005). A Participatory approach to e-learning-quality. A new perspective on the quality debate. *LLine – Journal for Lifelong Learning in Europe*, XI.
- Ehlers, U.D., Goertz, L., Hildebrandt, B., & Pawlowski, J. M. (2005). *Quality in e-learning, use and dissemination of quality approaches in European e-learning, A study by the European quality observatory*. Retrieved June 29, 2008, from [http://www2.trainingvillage.gr/etv/publication/download/panorama/5162\\_en.pdf](http://www2.trainingvillage.gr/etv/publication/download/panorama/5162_en.pdf)
- Ehlers, U.-D., Hildebrandt, B., Görtz, L., & Pawlowski, J. (2005). *Quality in E-learning. Use and dissemination of quality strategies in European E-learning. A study by the European quality observatory*. Thessaloniki: European Centre for the Development of Vocational Training.
- Ehlers, U. D. (2005a). Bringing collaboration to E-Learning. Making competence development possible. *Proceedings of EDEN Conference 2005*. Helsinki.

- Ehlers, U. D. (2006). Bildungsrelevante Qualitätsentwicklung. Qualitätskompetenz als Grundlage für Partizipation im Qualitätsprozess. In A. Sindler, & D. Carstensen (Eds.), *Qualitätssicherung im E-Learning*. Münster.
- Ehlers, U. D. (2006a). Quality literacy – between reference models and professionalisation. *Proceedings of EDEN Conference 2006*, Vienna.
- Ehlers, U.-D., & Pawlowski, J. M. (2006a). *Handbook for quality and standardisation in E-learning*. Heidelberg: Springer.
- Ehlers, U.-D., & Pawlowski, J. M. (2006b). *Handbook of quality and standardisation in E-learning*. Heidelberg: Springer.
- Ehlers, U. D. (2007). Making the difference in E-Learning: Towards competence development and E-irritation. *Tagungsband der EDEN Research Workshop 2007*. Barcelona.
- Ehlers, U. D. (2007). The need for quality – key process or add-on? In: *ELearningpapers* Nr. 2, <http://www.elearningpapers.eu>
- Ehlers, U. D. (2007). Towards a Greater Quality Literacy in an E-Learning Europe. In: *ELearningpapers* Nr. 2, <http://www.elearningpapers.eu>
- Ehlers, U. D., & Schneckenberg, D. (2007). Webucating the reflective practitioner. Towards competence development in E-learning. *Proceedings of the Conference Changing Faces of Learning*, Swiss Center for Innovation and Learning, St. Gallen.
- Ehlers, U. D. (2007a). Quality Literacy – competences for quality development in education and E-Learning. *Journal Educational Technology and Society*, 10(2), 96–108.
- Ehlers, U. D. (2007c). Making the difference in E-Learning: Towards competence development and E-irritation. In U. Bernath (Ed.), *Research in distance education and online learning*, ADSF Series, Oldenburg.
- Ehlers, U.-D. (2007e). Turing potentials into reality: Achieving sustainable quality in E-learning through quality competence. In H. H. Adelsberger, B. Collis, & J. M. Pawlowski (Eds.), *Handbook on information technologies for education and training*. Berlin: Springer.
- Ehlers, U. D. (2007f). E-Learning Standards nachhaltig anwenden - Potenziale ausschöpfen durch Qualitätskompetenz. In A. Back, P. Baumgartner, G. Reinmann, & R. Schulmeister (Eds.), *Zeitschrift für E-Learning, Lernkultur und Bildungstechnologie* (Vol. 2). Innsbruck, Wien: Studienverlag.
- Ehlers, U. D. (2008, March). Qualität im E-Learning. In: *Grundlagen der Weiterbildung-Praxishilfen*, GdW-Ph 71.
- Ehlers, U. D. (2009). Understanding quality culture. *International Journal for Quality Assurance in Education*. Emerald.
- Ehlers, U. D. (2010). *Open Educational Practice – Approaching a definition for a new concept*, OPAL project working paper. Essen.
- Ehlers, U.-D., & Helmstedt, C. (2010). *Quality for user generated content*. Essen: University of Duisburg.
- Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook “friends:” Social capital and college students’ use of online social network sites. *Journal of Computer-Mediated Communication*, 12(4), Article 1. Retrieved August 3, 2007, from <http://jcmc.indiana.edu/vol12/issue4/ellison.html>
- Engeström, Y. (1999). Innovative learning in work teams: Analysing cycles of knowledge creation in practice. In Y. Engeström (Ed.), *Perspectives on activity theory* (pp. 377–406). Cambridge: Cambridge University Press.
- Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, 14, 133–156.
- ENQA. (2005). [http://www.enqa.eu/pubs\\_esg.lasso](http://www.enqa.eu/pubs_esg.lasso)
- Erpenbeck, J., & Weinberg, J. (1993). *Menschenbild und Menschenbildung*. Münster: Waxmann.
- Erpenbeck, J., Heyse, V., & Max, H. (1999). *KODE®*. Berlin, Regensburg, Lakeland, FL.
- Erpenbeck, J., & Heyse, V. (2001). Kompetenztraining – 64 Informations – und Trainingsprogramme, Schäffer-Poeschel, Stuttgart.

- Erpenbeck, J. (2005). Kompetenzmessung als Bildungscontrolling im E-Learning? In U. Ehlers & P. Schenkel (Eds.), *Weiterbildungscontrolling im E-Learning: Jenseits des Rol*. Heidelberg: Springer.
- Erpenbeck, J., & Sauter, W. (2007). *Kompetenzentwicklung im Netz: New Blended Learning mit Web 2.0*. Köln.
- Euler, D., & Seufert, S. (Hrsg.). (2004). *Nachhaltigkeit von eLearning-Innovationen*. Ergebnis einer Delphi-Studie. SCIL-Arbeitsbericht 2. Universität St. Gallen.
- European Commission. (2001). *Non-formal and informal learning*. Brussels. [http://www.ec.europa.eu/education/.non-formal-and-informal-learning\\_en.pdf](http://www.ec.europa.eu/education/.non-formal-and-informal-learning_en.pdf)
- European Higher education institutions Association (EUA). (2006). *Quality culture in European universities: a bottom-up approach*. Brussels: European Higher Education Institutions Association.
- European University Association. (2006). *Quality culture in European universities: A bottom-up approach*. Report on the Three Rounds of the Quality Culture Project 2002–2006. Brussels.
- Falchikov, N., & Goldfinch, J. (2000). Student peer assessment in higher education: A meta-analysis. *Review of Educational Research*, 70, 287–322.
- Falk, R. (2000). *Betriebliches Bildungsmanagement: Arbeitsbuch für Studium und Praxis*. Köln: Wirtschaftsverlag Bachem.
- Federkeil, G. (2004). Benchmarking und Ranking als Instrumente des Leistungsvergleichs. In W. Fröhlich & W. Jütte (Eds.), *Qualitätsentwicklung in der postgradualen Weiterbildung: Internationale Entwicklungen und Perspektiven* (pp. 62–72). Berlin: Waxmann.
- Franker, K. (2010). A rubric for evaluating student blogs. Retrieved from <http://www2.uwstout.edu/content/profdev/rubrics/blogrubric.html>
- Franklin, H. (2007). *Web 2.0 for content for learning and teaching in higher education*. <http://www.jisc.ac.uk/media/documents/programmes/digitalrepositories/web2-content-learning-and-teaching.pdf>
- Franz, H. W. (2004). “Nur systematisch muss es sein?": Ein Plädoyer für mehr Einheit in der Vielfalt der Qualitätsansätze. In C. Balli, E. M. Krekel, & E. Sauter (Eds.), *Qualitätsentwicklung in der Weiterbildung – Wo steht die Praxis?* (pp. 107–121). Bielefeld: Bertelsmann.
- Fraunhofer IPSI. (2003). *Gemeinsam Online-Lernen: Technologien & Lernszenarien – Auswertung einer Umfrage des Fraunhofer IPSI bei Weiterbildungsanbietern im August/September*. Retrieved from [http://www.ipsi.fraunhofer.de/concert/projects\\_new/alba/Gemeinsam\\_Online\\_Lernen.pdf](http://www.ipsi.fraunhofer.de/concert/projects_new/alba/Gemeinsam_Online_Lernen.pdf)
- Friedrich, H. F., & Mandl, H. (1992). Lern- und Denkstrategien – ein Problemaufriß. In H. Mandl, & H. F. Friedrich (Hrsg.), *Lern- und Denkstrategien. Analyse und Intervention* (S. 3–54). Göttingen.
- Frieling, E., Schäfer, E., & Fölsch, T. (2007). *Konzepte zur Kompetenzentwicklung und zum Lernen im Prozess der Arbeit. Ergebnisse einer Fallstudie*. Münster: Waxmann.
- Friend-Pereira, J. C., Lutz, K., & Heerens, N. (2002). *European student handbook on quality assurance in higher education*. Retrieved September 30, 2008, from [http://www.unizg.hr/fileadmin/rektorat/dokumenti/ured\\_z\\_a\\_kvalitetu/dokumenti/QA\\_handbook\\_2003.pdf](http://www.unizg.hr/fileadmin/rektorat/dokumenti/ured_z_a_kvalitetu/dokumenti/QA_handbook_2003.pdf)
- Fröhlich, W., & Jütte, W. (2004). Qualitätsentwicklung in der wissenschaftlichen Weiterbildung. In W. Fröhlich & W. Jütte (Eds.), *Qualitätsentwicklung in der postgradualen Weiterbildung: Internationale Entwicklungen und Perspektiven* (pp. 9–17). Berlin: Waxmann.
- Futurelab. Retrieved April 04, 2007, from [http://www.futurelab.org.uk/resources/publications\\_reports\\_articles/vision\\_magazine/VISION\\_Article249](http://www.futurelab.org.uk/resources/publications_reports_articles/vision_magazine/VISION_Article249)
- Goldman, R., & Gabriel, R. P. (2005). *Innovation happens elsewhere: Open source as business strategy*. Amsterdam: Morgan Kaufmann.
- Gonon, P., Hügli, E., Landwehr, N., Ricka, R., & Steiner, P. (1998). *Die neue Qualitätsdiskussion in Schule und Bildung – Analyse und Perspektive* (2nd ed.). Aarau, Schweiz: Verlag Sauerländer.
- González, J., & Wagenaar, R. (2004). *Tuning educational structures*. Bilbao: University of Deusto.

- Goodrich Andrade, H. (2001, April 17). The effects of instructional rubrics on learning to write. *Current Issues in Education*, 4(4). Retrieved from <http://cie.ed.asu.edu/volume4/number4/>
- Graham, P. (2005, August 1–5). *What business can learn from open source*, essay derived from a talk given at OSCON (O'Reilly Open Source Convention), Portland, Ore. Retrieved December 1, 2011, from <http://www.paulgraham.com/opensource.html>
- Granovetter, M. (1973). The strength of weak ties. *The American Journal of Sociology*, 78(1973), 1360–1380.
- Granovetter, M. (1983). The strength of weak ties: A network theory revisited. *Sociological Theory*, 1, 201–233.
- Graumann, C.F. (Hrsg.). (1982). *Kurt-Lewin-Werkausgabe, Bd.6: Psychologie der Entwicklung und Erziehung*. Bern.
- Haas, H. S., & Hanselmann, P. G. (2005). Qualitätsmanagement im Kontext der Gestaltung sozialer Dienste in Europa. In Linbach, Lübking, Scholz, & Schulte (Eds.), *Die Zukunft der sozialen Dienste vor der Europäischen Herausforderung*. Baden-Baden: Nomos Verlagsgesellschaft, 463 p.
- Hacker, D. J., & Niederhauser, D. S. (2000). Promoting deep and durable learning in the online classroom. In R. E. Weiss, D. S. Knowlton, & B. W. Speck (Eds.), *New directions for teaching and learning* (Vol. 84, pp. 53–63). San Francisco: Jossey-Bass.
- Hagel, J., & Brown, J. S. (2005). *The only sustainable edge: Why business strategy depends on productive friction and dynamic specialization*. Boston: Harvard Business School Press.
- Hagner, P. R., & Schneebeck, C. A. (2001). Engaging the faculty. In C. A. Barone & P. R. Hagner (Eds.), *Technology-enhanced teaching and learning: Leading and supporting the transformation on your campus* (pp. 1–12). San Francisco: Jossey-Bass.
- Hanft, A. (1997). Lernen in Netzwerkstrukturen. Tendenzen einer Neupositionierung der betrieblichen und beruflichen Bildung. In *Arbeit. Zeitschrift für Arbeitsforschung, Arbeitsgestaltung und Arbeitspolitik*, 3/97, 283–303.
- Harnad, S. (1996). Implementing peer review on the Net: Scientific quality control in scholarly electronic journals. In R. Peek & G. Newby (Eds.), *Scholarly publication: The electronic frontier* (pp. 103–108). Cambridge MA: MIT.
- Harnad, S. (1999). The future of scholarly skywriting. In Scammell, A. (Ed.), *I in the Sky: Visions of the information future*. Aslib, November 1999. <http://www.cogsci.soton.ac.uk/~harnad/Papers/Harnad/harnad99.aslib.html>
- Harvey, L. (2006). Understanding quality. In L. Purser (Ed.), *EUA Bologna handbook: making bologna work*. Brussels and Berlin. Retrieved September 29, 2008, from <http://www.bologna-handbook.com>
- Harvey, L., & Green, D. (2000). Qualität definieren – Fünf unterschiedliche Ansätze. In A. Helmke, W. Hornstein, & E. Terhart (Hrsg.), *Qualität und Qualitätssicherung im Bildungsbereich: Schule, Sozialpädagogik, Hochschule. Zeitschrift für Pädagogik* (Vol. 41 Beiheft, S. 17–40), Weinheim, Basel.
- Hasler Roumois, U. (2007). *Studienbuch Wissensmanagement, Grundlagen der Wissensarbeit in Wirtschafts-, Non-Profit- und Public-Organisationen*. Zürich: Orell Füssli Verlag.
- Hay, D. B., Kehoe, C., Miquel, M. E., Hatzipanagos, S., Kinchin, I. M., Keevil, S. F., et al. (2008). Measuring the quality of e-learning. *British Journal of Educational Technology*, 39(6), 1037–1056. doi:10.1111/j.1467-8535.2007.00777.x.
- Hofstede, G. (1991). *Kulturen und Organisationen*. Wiesbaden.
- Hofstede, G. (1997). *Lokales Denken, Globales Handeln. Kulturen, Zusammenarbeit und Management*. München: Verlag C. H. Beck.
- Hofstede, G., & Hofstede, G. J. (2005). *Cultures and organizations. Intercultural cooperation and its importance for expanded, revised and expanded 2nd edition*. USA: McGraw-Hill.
- Holzkamp, K. (1993). *Lernen. Subjektwissenschaftliche Grundlegung*. Frankfurt a. M., New York.
- Hood, C. (1998). *The art of the state: Culture, rhetoric, and public management*. Oxford: Clarendon.

- Homung-Prähauser, Geser, G., Hilzensauer, W., & Schaffert, S. (2007). *Didaktische, organisatorische und technologische Grundlagen von E-Portfolios und Analyse internationaler Beispiele und Erfahrungen mit E-Portfolio-Implementierungen an Hochschulen StudienautorInnen*. Salzburg.
- Howe, J. (2006, June). The Rise of crowdsourcing. *Wired Magazine*, 14. Retrieved June 29, 2009, from <http://www.wired.com/wired/archive/14.06/crowds.html>
- Hylén, J. (2006). *Open educational resources: Opportunities and challenges*. <http://www.oecd.org/dataoecd/5/47/37351085.pdf>
- Jackson, D. (2002, March 18–19). The creation of knowledge networks; collaborative enquiry for school and system improvement. Paper presented to the CERI/OECD/DfES/QCA ESRC Forum “Knowledge Management in Education and Learning”, Oxford.
- JISC Infonet, & Northumbria Higher education institutions. (2008a). *e-Portfolios: Assessing e-Portfolios: Guidance for practitioners*. Retrieved June 30, 2008, from <http://www.jiscinfonet.ac.uk/infokits/e-portfolios/assessment-guidance>
- JISC Infonet, & Northumbria Higher education institutions. (2008b). *e-Portfolios: Learning Processes*. Retrieved June 30, 2008, from <http://www.jiscinfonet.ac.uk/infokits/e-portfolios/processes>
- JISC. (2009). Higher education in a Web 2.0 world. London. Retrieved from <http://www.jisc.ac.uk/media/documents/publications/heweb20rptv1.pdf>
- International Standardization Organization (2000a), ISO9000. Geneva.
- Irvin, L. L. (2004). Reflection in the electronic, writing classroom. In: *Computers and Composition Online*. Retrieved June 29, 2009, from <http://www.bgsu.edu/cconline/irvin/Introduction.htm>
- ISO. (2009). Retrieved December 02, 2009, from [http://www.iso.org/iso/iso\\_catalogue/management\\_standards/iso\\_9000\\_iso\\_14000/qmp.htm](http://www.iso.org/iso/iso_catalogue/management_standards/iso_9000_iso_14000/qmp.htm). Retrieved December 02, 2009, from [http://www.iso.org/iso/standards\\_development/processes\\_and\\_procedures/how\\_are\\_standards\\_developed.htm](http://www.iso.org/iso/standards_development/processes_and_procedures/how_are_standards_developed.htm)
- ISO/IEC. (2005). *ISO/IEC 19796-1:2005, Information technology – learning, education, and training – quality management, assurance and metrics – Part 1: General approach, Final Draft International Standard (FDIS)*. Retrieved September 29, 2008, from [http://www.iso.org/iso/catalogue\\_detail?csnumber=33934](http://www.iso.org/iso/catalogue_detail?csnumber=33934)
- Jackson, S. E., Chuang, C. H., Harden, E. E., & Jiang, Y. (2006). Toward developing human resource management systems for knowledge-intensive teamwork. *Personnel and Human Resources Management*, 15, 17–70.
- Kade, J., Lüders, C., & Hornstein, W. (1993). Die Gegenwart des Pädagogischen – Fallstudien zur Allgemeinheit der Bildungsgesellschaft. In J. Oelkers, & H. ETenorth (Hrsg.), *Pädagogisches Wissen* (pp. 39–65). Weinheim/Basel.
- Kade, J., & Seitter, W. (1996). *Lebenslanges Lernen - Mögliche Bildungswelten. Erwachsenenbildung, Biographie und Alltag*. Opladen.
- Kalz, M., Drachsler, H., van Bruggen, J., Hummel, H., & Koper, R. (2007). *Wayfinding services for open educational practices*. Heerlen: Educational Technology Expertise Center.
- Keller, P., & Mossink, W. (2008). *Reuse of material in the context of education and research*. [http://learn.creativecommons.org/wp-content/uploads/2009/07/090706surfcc\\_reuse\\_materiaal\\_def.pdf](http://learn.creativecommons.org/wp-content/uploads/2009/07/090706surfcc_reuse_materiaal_def.pdf), Abruf am 2010-01-10.
- Kerres, M. (2006, August). Potenziale von Web 2.0 nutzen. In A. Hohenstein, & K. Wilbers (Hrsg.), *Handbuch E-Learning*. München: DWD–vorläufige Fassung, <http://mediendidaktik.uni-duisburg-essen.de/files/web20-a.pdf> [Zugriff am 20.10.2006].
- Kerres, M., & de Witt, C. (2004). Pragmatismus als theoretische Grundlage für die Konzeption von eLearning. In H. O. Meyer & D. Treichel (Eds.), *Handlungsorientiertes Lernen und eLearning* (pp. 77–99). München: Oldenbourg Verlag.
- Khokha, S. (2006). *Text message, MySpace roots of student protests*. Retrieved January 10, 2007, from [www.npr.org/templates/story/story.php?storyId=5309238](http://www.npr.org/templates/story/story.php?storyId=5309238)
- Kim, D., & Lee, S. (2002). Designing collaborative reflection supporting tools in E-project-based learning environments. *Journal of Interactive Learning Research*, 13, 375–392.



- Kinuthia, W., & Nkonge, B. (2005). Perspectives on Culture and e-Learning Convergence. In G. Richards (Ed.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 2613–2618). Chesapeake, VA: AACE.
- Kogan, M. (1999). The culture of academe. *Minerva*, 37(1), 63–74.
- Kolb, D. A. (1984). *Experiential Learning experience as a source of learning and development*. New Jersey: Prentice Hall.
- Kolb, D. A., & Kolb, A. Y. (2005). *Learning style inventory – version 3.1 2005. Technical specifications*. Boston: Hay Group.
- Korpinen, E. (1976). Sanallisten tiedotten kehittäminen peruskoulun ala-astelle. Jyväskylän.
- Kop, R., & Hill, A. (2008). Connectivism: Learning theory of the future or vestige of the past? *The International Review of Research in Open and Distance Learning*, 9(3).
- Koper, R., & Tattersall, C. (2004). New directions for lifelong learning using Network technologies. *British Journal of Educational Technology*, 35(6), 689–700. Retrieved June 29, 2009, <http://dspace.ou.nl/handle/1820/247>
- Koschmann, T. (1996). Paradigm shifts and instructional technology. In T. Koschmann (Ed.), *CSCIL: Theory and practice of an emerging paradigm* (pp. 1–23). Mahwah, NJ: Lawrence Erlbaum.
- Kuhn, T. S. (1976). *Die Struktur wissenschaftlicher Revolutionen*. Frankfurt am Main: Suhrkamp.
- Kurhila, J., Miettinen, M., Nokelainen, P., & Tirri, H. (2002). *Use of social navigation features in collaborative e-learning*. Retrieved June 29, 2009, from <http://cosco.hiit.fi/edutech/publications/learn2002.pdf>
- Lagrosen, S., Seyyed-Hashemi, R., & Leitner, M. (2004). Examination of the dimensions of quality in higher education. *Quality Assurance in Education*, 12(2), 61–69.
- Lassonde, C. A., & Reinhart, L. (2004). Making it theirs: Literacy teachers use reflection as a tool for shaping practice. *Journal of Authentic Learning*, 1, 1–12
- Laurillard, D. (1993). *Rethinking university teaching: A framework for the effective use of educational technology*. London: Routledge.
- Lave, J. (1996). Teaching as learning, in practice. *Mind, Culture and Activity*, 3(3), 149–164.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.
- Lee, M. J. W., & McLoughlin, C. (2007). Teaching and learning in the Web 2.0 Era: Empowering students through learner-generated content. *International Journal of Instructional Technology and Distance learning* 4(10), 21–34
- Leef, G. C. (2003). Accreditation is no guarantee of academic quality. *The Chronicle of Higher Education*, 49(30), B17.
- Leslie, S. (2003). *Use of Blogs for education*. Retrieved August 23, 2012 from <http://www.edtechpost.ca/wordpress/files/2003/10/matrix2.gif>
- Levy, M., & Kennedy, C. (2005). Learning Italian via mobile SMS. In A. Kukulska-Hulme & J. Traxler (Eds.), *Mobile learning: A handbook for educators and trainers* (pp. 76–83). London: Routledge Falmer.
- Lewin, K. (1982). Kurt Lewin Werkausgabe, hg. von C.-F. Graumann. Band 4. Feldtheorie, hg. von Carl-Friedrich Graumann. Bern: Huber, Stuttgart: Klett-Cotta.
- Linden, G., Smith, B., & York, J. (2003). *Industry report, Amazon.com recommendations, item-to-item collaborative filtering*. <http://www.cs.umd.edu/~samir/498/Amazon-Recommendations.pdf>
- Liu, X., Bollen, J., Nelson, M. L., & Van de Sompel, H. (2005). Co-authorship networks in the digital library research community. *International Journal of Information Processing and Management*, 41(6), 1462–1480.
- Lock, S. (1994). Does editorial peer review work? *Annals of Internal Medicine*, 121(1), 60–61.
- Löffler, S. (2005). *Qualitätsmanagement unter genderrelevanten Aspekten Bericht über die Prüfung von ausgewählten Qualitätsmanagementsystemen an Hochschulen auf die Berücksichtigung genderrelevanter Aspekte*. Created for Center for Higher Education Research, School of Education, Psychology and Sports, Mannheim.

- Lonsdale, P., & Beale, R. (2005). Using context awareness to enhance visitor engagement in a gallery space. *Proceedings of HCI 2005 Conference*. Edinburgh, UK. Retrieved May 01, 2007, from <http://www.cs.bham.ac.uk/~rxb/Online%20papers/HCI2005-crc.pdf>
- Lucas, R. I. G. (2007). A study on portfolio assessment as an effective student self-evaluation scheme. *The Asia Pacific-Education Researcher*, 16(1), 23–32.
- Lüders, C., Kade, J., & Hornstein, W. (1995). Entgrenzung des Pädagogischen. In H. H. Krüger, & W. Helsper (Hrsg.), *Einführung in Grundbegriffe und Grundfragen der Erziehungswissenschaft* (pp. 207–215). Opladen.
- Mabawonku, A. O. (2003). Cultural framework for the development of science and technology in Africa. *Science and Public Policy*, 30(2), 117–125.
- MacManus, R., & Porter, J. (2005). Web 2.0 for designers. In: *Web 2.0 Design: Bootstrapping the Social Web*, *Digital Web Magazine*. Retrieved December 25, 2008, from [http://www.digital-web.com/articles/web\\_2\\_for\\_designers/](http://www.digital-web.com/articles/web_2_for_designers/)
- Malone, T. W. (2004). *The future of work*. Boston, MA: Harvard Business School Press.
- Mandl, H., Gruber, H., & Renkl, A. (1997). Lernen und Lehren mit dem Computer. In F. E. Weinert & H. Mandl (Eds.), *Psychologie der Erwachsenenbildung* (pp. 437–467). Göttingen, Germany: Hogrefe.
- Mandl, H., Gruber, H., & Alexander, R. (1997). Situiertes Lernen in multimedialen Lernumgebungen. In L. J. Issing, & P. Klimsa (Hg.), *Information und Lernen mit Multimedia*, 2. überarbeitete Auflage, Psychologie-Verlags-Union, Weinheim.
- Mandl, H., & Krause, U. M. (2001). *Lernkompetenz für die Wissensgesellschaft*. Forschungsbericht Nr. 145. Ludwig-Maximilians-Universität München.
- Mandl, H., Prenzel, M., & Gräsel, C. (1992). *Das Problem des Lerntransfers in der betrieblichen Weiterbildung* (Forschungsbericht Nr. 1). München: Universität München, Lehrstuhl für Empirische Pädagogik und Pädagogische Psychologie.
- Marsick, V. J., & Watkins, K. (1990). *Informal and incidental learning in the workplace*. London: Routledge.
- Martin, D., Williams Petty, J., & Petty, W. J. (2000). *Value based management: The corporate response to the shareholder revolution*. Boston: Harvard Business School Press.
- Martin, M. (2008). Guide to using free tools to create an online portfolio. The Bamboo Project.
- Mayes T. (2004). *Review of technology enhanced learning theories, frameworks and models. JISC technology enhanced learning Models Desk Study*. Retrieved December 18, 2007, from <http://www.elearning.ac.uk/resources/modelsdeskreview/>
- Mayes, T. & de Freitas, S. (2004). *Stage 2: Review of e-learning theories, frameworks and models. JISC desk research study*. Retrieved November 17, 2010 from <http://www.elearning.ac.uk/resources/modelsdeskreview/>
- McAndrew, P., Santos, A.I., et al. (2009). *Openlearn Research Report 2006–2008*. Milton Keynes: The Open University. Retrieved March 31, 2010, from <http://aisantos.files.wordpress.com/2010/03/openlearn-research-report.pdf>
- McClelland, D. C. (1973). Testing for competence rather than for “intelligence”. *American Psychologist*, 28, 1–14.
- McClelland, D. C., & Boyatzis, R. E. (1982). The leadership motive pattern and long-term success in management. *Journal of Applied Psychology*, 67(6), 737–743.
- Mejias, U. (2005). *A nomad's guide to learning and social software*. Retrieved December 10, 2006, from [http://knowledgetree.flexiblelearning.net.au/edition07/download/la\\_mejias.pdf](http://knowledgetree.flexiblelearning.net.au/edition07/download/la_mejias.pdf)
- Melville, P., Mooney, R. J., & Nagarajan, R. (2002). *Proceedings of the Eighteenth National Conference on Artificial Intelligence* (pp. 187–192). Edmonton, Canada, July 2002. Content-Boosted Collaborative Filtering for Improved Recommendations. Department of Computer Sciences, Higher Education Institutions of Texas.
- Mertler, C. A. (2001). Designing scoring rubrics for your classroom. *Assessment, Research and Evaluation*, 7(25). Retrieved from <http://PAREonline.net/getvn.asp?v=7&n=25>
- Mettler von Meiborn, B. (1994). *Kommunikation in der Mediengesellschaft*. Berlin.



- Meyer, K. A. (2002). Quality in distance education: Focus on on-line learning. *ASHE-ERIC Higher Education Report*, 29(4), 1–121.
- Miltiadis, D., & Roberto, G. (2008). Semantic Web applications: a framework for industry and business exploitation – what is needed for the adoption of the semantic Web from the market and industry. *International Journal of Knowledge and Learning*, 4(1), 93–108.
- Min, S. (2007). Online vs face-to-face deliberation: Effects on civic engagement. *Journal of Computer-Mediated Communication*, 12(4), Article 11. Retrieved August 3, 2007, from <http://jcmc.indiana.edu/vol12/issue4/min.html>
- Mintzberg, H. (1994). *The rise and fall of strategic planning*. Hemel, Hempstead: Prentice Hall Europe.
- Morgan, G. (2002). *Bilder der organisation*. Stuttgart: Klett-Cotta.
- Morris, J., & Stew, G. (2007). Collaborative reflection: How far do 2:1 models of learning in the practice setting promote peer reflection? *Reflective Practice*, 8(3), 419–432. doi:10.1080/14623940701425220.
- Morville, P. (2004). *Ambient Findability*, Online Article. Retrieved June 29, 2009, from [http://www.digital-web.com/articles/ambient\\_findability/](http://www.digital-web.com/articles/ambient_findability/)
- Munro, A., Höök, K., & Benyon, D. (1999). Footprints in the Snow. In A. Munro, K. Höök, & D. Benyon (Eds.), *Social navigation of information space* (pp. 1–14). London: Springer.
- Musser, J., & O'Reilly, T. (2006). *Web 2.0 – principles and best practices*. Sebastopol, CA: O'Reilly Media.
- Nejdl, W., & Wolpers, M. (2004). *European E-Learning: Important research issues and application scenarios*. Retrieved June 29, 2009, from <http://www.zsi.at/attach/edmedia04.final.pdf>
- Newton, J. (2000). Feeding the beast or improving quality?: Academics' perceptions of quality assurance and quality monitoring. *Quality in Higher Education*, 6(2), 153–163.
- Nikolou-Walker, E. (2007). Critical reflections on an evaluative comparative analysis of work-based learning through organizational change mechanisms: A study of two public service organizations in Northern Ireland. *Reflective Practice*, 8(4), 525–543. doi:10.1080/14623940701649803.
- Nitko, A. J. (2001). *Educational assessment of students* (3rd ed.). Upper Saddle River, NJ: Merrill.
- Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, 5(1), 14–37.
- Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanes companies create the dynamics of innovation*. New York: Oxford University Press.
- North, K., & Reinhardt, K. (2003). Transparency and transfer of individual competencies – a concept of integrative competence management. *Journal of Universal Computer Science*, 9(12), 1372–1381.
- North, K. (2005). *Wissensorientierte Unternehmensführung: Wertschöpfung durch Wissen*. Gabler.
- North, K., & Reinhardt, K. (2005). *Kompetenzmanagement in der Praxis – Mitarbeiterkompetenzen systematisch identifizieren, nutzen und entwickeln. Mit vielen Fallbeispielen*. Wiesbaden: Gabler.
- OECD. (2005). *E-learning in tertiary education: Where do we stand?* Paris.
- OECD. (2007). *Giving knowledge for free: The emergence of open educational resources*. Paris: OECD.
- O'Reilly, T. (2004). *What is Web 2.0: Design patterns and business models for the next generation of software*. Retrieved August 27, 2007 from <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html>
- O'Reilly, T. (2005). *What is Web 2.0 – design patterns and business models for the next generation of software*. Retrieved June 29, 2009, from <http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html?page=1>
- O'Reilly, T. (2007a). What is Web 2.0: Design patterns and business models for the next generation of software. *Communications and Strategies*, 1st quarter 2007(65), 17–32. Retrieved June 29, 2009, from <http://ssrn.com/abstract=1008839>

- O'Reilly, T. (2007b). *Comment on: Web 3.0 – the best official definition imaginable*, by Nova Spivack. Retrieved June 1, 2009, from [http://novaspivack.typepad.com/nova\\_spivacks\\_weblog/2007/10/web-30—the-a.html#comment-85164360](http://novaspivack.typepad.com/nova_spivacks_weblog/2007/10/web-30—the-a.html#comment-85164360)
- Open and Distance Learning Quality Council (ODLQC). (2001). *Standards in open and distance education*. Retrieved September 29, 2008, from <http://www.odlqc.org.uk/st-int.htm>
- Oradini, F., & Saunders, G. (2007). Introducing e-portfolios across a paper dominated university. *Association for Learning Technology, Newsletter*, 10. Retrieved September 09, 2008 [http://newsletter.alt.ac.uk/e\\_article000925026.cfm](http://newsletter.alt.ac.uk/e_article000925026.cfm)
- Ouchi, W. G. (1981). *Theory Z: How American business can meet the Japanese challenge*. Reading, MA: Addison-Wesley.
- Overwien, B. (2000). Befreiungspädagogik und informelles Lernen – eine Verbindung für globales Lernen? In A. Scheunpflug, & K. Hirsch (Hrsg.), *Globalisierung als Herausforderung für die Pädagogik* (S. 137–155). Frankfurt/Main.
- Paavola, S., Lipponen, L., & Hakkarainen, K. (2004). Models of innovative knowledge communities and three metaphors of learning. *Review of Educational Research*, 74(4), 557–576.
- Pape, B., & Rolf, A. (2004). Integrierte Organisations- und Softwareentwicklung für kooperative Lernplattformen in der Hochschullehre. In B. Pape, D. Krause, & H. Oberquelle (Hrsg.), *Wissensprojekte – Gemeinschaftliches Lernen aus didaktischer, softwaretechnischer und organisatorischer Sicht*. Münster u.a., S. 287–310.
- Parker, J., & Chao. (2007). Wiki as a teaching tool. *Interdisciplinary Journal of Knowledge and Learning Objects*, 3, 57–71. Retrieved January, 2011, from <http://www.scribd.com/doc/167120/Wiki-as-a-Teaching-Tool> (See also <http://wikis.cybernetic-meadows.net/tiki-index.php?page=web+20+bibliography> Retrieved January, 2011).
- Paulus, T. (2007). CMC modes for learning tasks at a distance. *Journal of Computer-Mediated Communication*, 12(4), Article 9. Retrieved August 3, 2007, from <http://jcmc.indiana.edu/vol12/issue4/paulus.html>
- Pawlowski, J. M., & Bick, M. (2008). Integration of learning and working: Convergent processes and systems. In H. H. Adelsberger, P. Kinshuk, J. M. Pawlowski, & D. Sampson (Eds.), *Handbook on information technologies for education and training* (International handbook on information systems series 2nd ed.). Berlin: Springer.
- Perkel, D. (2006, September 21–23). Copy and paste literacy: Literacy practices in the production of a MySpace profile. Paper was presented at “Informal Learning and Digital Media: Constructions. Context, Consequences”, University of California.
- Piaget, J. (1971). *The child's conception of movement and speed*. New York: Ballantine Books. BF723.M6 P53 1971.
- PLS Ramboll Management. (2004). Studies in the context of the E-learning initiative: Virtual models of European Universities (Lot 1): Final report to the EU Commission, DG Education & Culture. Retrieved from <http://www.upload.pls.ramboll.dk/eng/Publications/PublicAdministration/VirtualModels.pdf>
- Pond, W. K. (2002). Twenty-first century education and training: Implications for quality assurance. *The Internet and Higher Education*, 4, 185–192.
- Porter, M. E. (1985). *Competitive advantage*. New York: Free.
- Posch, P., & Altrichter, H. (1997). *Möglichkeiten und Grenzen der Qualitätsevaluation und Qualitätsentwicklung im Schulwesen*. Innsbruck: StudienVerlag.
- Qualley, D. J. (1997). *Turns of thought: Teaching composition as reflexive inquiry*. Portsmouth, NH: Boynton/Cook.
- Quartapelle, A., & Larsen, G. (1996). Kundenzufriedenheit. Wie Kundenzufriedenheit im Dienstleistungsbereich die Rentabilität steigert. Berlin.
- Race, P. (1995) *The art of assessing, new academic*, Autumn 1995, 3–5 and Spring 1996, 3–6 and in DeLiberations [http://www.lgu.ac.uk/deliberations/assessment/artof\\_fr.html](http://www.lgu.ac.uk/deliberations/assessment/artof_fr.html)
- Race, P. (1998). Practical pointers in peer assessment. In S. Brown (Ed.), *Peer assessment in practice* (SEDA paper 102, pp. 113–122). Birmingham: SEDA

- Reed, J., & Koliba, C. (1995). *Facilitating reflection, a manual for leaders and educators*. Retrieved June 29, 2009, from [http://www.uvm.edu/~dewey/reflection\\_manual/understanding.html](http://www.uvm.edu/~dewey/reflection_manual/understanding.html)
- Reinmann- Rothmeier, G., et al. (2001). *Wissensmanagement lernen*. Weinheim u.a: Beltz Verlag.
- Rekkedal, T. (2006). Distance Learning and Technology enhanced learning Quality for SMEs – State of the Art. In: *EU Leonardo project*. Retrieved June 29, 2009, from <http://extranet.profitwise.info/db/download/isdn/54/ELQ-SMEStateofArtshort.pdf>
- Research project QMPP <http://www.efquel.org/peer-production/>
- Reynolds, L. (2007). *An Essay Evolves*. Retrieved March 5, 2007, from <http://evolvingessay.pbwiki.com/>
- Richardson, W. (2006). Cited in Social Software in Education. *Vision*, 3, 8–10.
- Riddy, P., Fill, K., Wolf, K. D., Rosato, S., & Balasca, N. (2002). *MECA-ODL: Compendium of reference materials on quality in open and distance learning*. Retrieved September 29, 2008, [http://www.adeit.uv.es/mecaodl/docs/compendium\\_english.pdf](http://www.adeit.uv.es/mecaodl/docs/compendium_english.pdf)
- Roberts, T. S. (2006). *Self, peer and group assessment in E-learning*. Hershey, PA: Information Science Publishing.
- Robertson, S. (2006). *Peer assist. Knowledge management specialist library*. Retrieved June 29, 2009, from <http://www.library.nhs.uk/KnowledgeManagement/ViewResource.aspx?resID=125167>
- Rodriguez, M. A., & Bollen J. (2008). *An algorithm to determine peer-reviewers*. <http://portal.acm.org/citation.cfm?id=1458127>
- Rogers, E. M. (1962). *Diffusion of innovations*. Glencoe: Free
- Rost, M. (1996). *Die Netzrevolution. Auf dem Weg in die Weltgesellschaft*. Frankfurt/M.
- Rohrbach, B. (1969). Kreativ nach Regeln – Methode 635, eine neue Technik zum Lösen von Problemen. *Absatzwirtschaft*, 12(19), 73–76.
- Rolheiser, C., & John A. R. (2001). *Student self-evaluation: What research says and what practice shows*. [http://www.cdl.org/resource-library/articles/self\\_eval.php?type=subject&id=4](http://www.cdl.org/resource-library/articles/self_eval.php?type=subject&id=4)
- Romiszowski, A. (2003, September). The future of e-learning as an educational innovation: Factors influencing project success and failure. *Brazilian Review of Open and Distance Learning*. Retrieved from <http://www.abed.org.br/publique/cgi/cgilua.exe/sys/start.htm?UserActiveTemplate=2ing&inford=834&sid=70> [cited 3.09.2005]
- Rowland, F. (2002). *The peer review process: A report to the JISC scholarly communications group*. Retrieved June 29, 2009, from [http://www.jisc.ac.uk/uploaded\\_documents/rowland.pdf](http://www.jisc.ac.uk/uploaded_documents/rowland.pdf)
- Rüegg-Stürm, J. (2004). Das neue St. Galler management-modell. In R. Dubs et al. (Eds.), *Einführung in die Managementlehre* (1st ed.). Bern: Haupt-Verlag.
- Ruiz, J. G., Candler, C., & Teasdale, T. A. (2007). Educational strategies. Peer reviewing E-learning: opportunities, challenges, and solutions. *Academic Medicine*, 82(5), 503–507. doi:10.1097/ACM.0b013e31803ead94.
- Salzgeber, G. (1996). *Reflexion (in) der Praxissituation im Projektstudium Betriebspädagogik. Eine "Lehr-Geschichte" zur Ausbildung von Studierenden im Umgang mit komplexen, unsicheren, einzigartigen, wert- und interessenbeladenen Praxissituationen*. Universität Innsbruck.
- Schein, E. H. (1985). *Organizational culture and leadership*. San-Francisco: Jossey-Bass.
- Schein, E. H. (1992). *Organizational culture and leadership* (2nd ed.). San-Francisco: Jossey-Bass.
- Schein, E. H. (1999). *The corporate culture survival guide: Sense and nonsense about culture change*. San-Francisco: Jossey-Bass.
- Schenkler, B. (2008, August). What is technology enhanced learning 2.0? In: *Learning solution magazine. Practical applications of technology for learning. E-magazine, the technology enhanced learning guild*. Retrieved January 06, 2008, from <http://www.elearningguild.com/articles/abstracts/index.cfm?action=viewonly2&id=279&referer=http%3A%2F%2Fbldl.blogspot.com%2F2008%2F08%2Flearning-20-informal-learning-learning.html>. Info: Login required, bn: WikiBruce – pw: learn4life08

- Schneckenberg, D. (2008). *Educating tomorrow's knowledge workers*. Delft: Eburon Academic Publishers.
- Schön, D. (1983). *The reflective practitioner. How professionals think in action*. London: Temple Smith.
- Schön, D. (1986). *Education the reflective Practitioner*. San Francisco, CA: Jossey-Bass.
- Scribner, S., & Cole, M. (1973). Cognitive consequences of formal and informal education. *Science*, 182, 553–559.
- Scanlan, C.L. (2003). Assessment, evaluation, testing and grading. Retrieved from <https://wiki.rit.edu/download/attachments/31492874/Assessment,%20Evaluation,%20Testing%20and%20Grading.pdf?version=1&modificationDate=1289418726677&api=v2>
- Seeger, M. W., Sellnow, T. L., & Ulmer, R. R. (2003). *Communication, organization and crisis*. West port, CT: Quorum.
- Seely-Brown, J. (2008). Foreword. In T. Liyoshi & M. Kumar (Eds.), *Opening up education*. Cambridge, MA: MIT.
- Seghezzi, H. D. (2003). *Integriertes Qualitätsmanagement – Das St. Galler Modell*. St. Gallen: Hanser Wirtschaft.
- Senge, P. (2006). *The fifth discipline: The art and practice of the learning organization*. New York, NY: Currency Doubleday.
- Seufert, S. (2007). 'Ne(x)t Generation Learning' - Was gibt es Neues über das Lernen? In S. Seufert & T. Brahm (Eds.), *Ne(x)t Generation Learning: Wikis, Blogs, Mediacasts & Co. – Social Software und Personal Broadcasting auf der Spur* (pp. 2–19). St. Gallen: Universität St. Gallen.
- Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher*, 27(2), 4–13.
- Siemens, G. (2004). *Connectivism* <http://www.elearnspace.org/Articles/connectivism.htm>
- Siemens, G. (2004). *Connectivism: A learning theory for the digital age*. Retrieved June 29, 2009, from [http://www.itdl.org/Journal/Jan\\_05/article01.htm](http://www.itdl.org/Journal/Jan_05/article01.htm)
- Siemens, G. (2005, January). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2(1).
- Siemens, G. (2006, November). *Connectivism: A open learning theory?* Plön Verhagen (University of Twente).
- Siemens, G. (2008, May). Foundations of educational theory for online learning, Mohamed Ally. In T. Anderson (Hrsg.), *The theory and practice of online learning*.
- Simon, B. (2001). *E-Learning an Hochschulen: Gestaltungsräume und Erfolgsfaktoren von Wissensmedien*. Lohmar, Köln: Eul.
- Sponder, D., & Stewart, F. (2002). *Embracing e-Learning in Australian Schools*. Brisbane: Commonwealth Bank.
- Spivack, N. (2007). Web 3.0 – the best official definition imaginable. In: *Minding the Planet*. Retrieved May 1, 2009, from [http://novaspivack.typepad.com/nova\\_spivacks\\_weblog/2007/10/web-30—the-a.html](http://novaspivack.typepad.com/nova_spivacks_weblog/2007/10/web-30—the-a.html)
- Srikanthan, G., & Dalrymple, J. F. (2002). Developing a holistic model for quality in higher education. *Quality in Higher Education*, 8(3), 215–224.
- Stahl, G. (2002). Computer support for collaborative knowledge building. *The Journal of the Learning Sciences*, 3(3), 265–283.
- Steiner, D. (2003). *Survey: How do users feel about ebay's feedback system?* Retrieved June 29, 2009, from <http://www.auctionbytes.com/cab/abu/y203/m01/abu0087/s02>
- Stehr, N. (1994). *Arbeit, Eigentum und Wissen. Zur Theorie von Wissensgesellschaften*. Frankfurt/M.
- Stiggins, R. (2008). *Assessment manifesto, assessment training institute*. Retrieved June 29, 2009, from <http://www.assessmentinst.com/forms/AssessmentManifesto.pdf>
- Stracke, C. M., & Hildebrandt, B. (2007). Quality development and quality standards in E-learning: Adoption, implementation, and adaptation. *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunication*, 4158–4165.
- Stratton, R. (2006). *The earned value management maturity model*. Vienna: Management Concepts.

- Strivens, J. (2007). *A survey of e-pdp and e-portfolio practice in UK higher education*. Retrieved June 28, 2009, from [http://www.heacademy.ac.uk/assets/York/documents/ourwork/ta/personal\\_development\\_plan/survey\\_of\\_epdp\\_and\\_eportfolio\\_practice\\_in\\_uk\\_higher\\_education.pdf](http://www.heacademy.ac.uk/assets/York/documents/ourwork/ta/personal_development_plan/survey_of_epdp_and_eportfolio_practice_in_uk_higher_education.pdf)
- Surowiecki, J. (2004). *The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business, economies, societies and nations little*. New York: Doubleday.
- Sursock, A. (2004). Qualitätskultur und Qualitätsmanagement. In W. Benz et al. (Eds.), *Handbuch Qualität in Studium und Lehre*. Berlin: Raabe Verlag.
- Sutch, D., & Sprake, J. (2005). *Mudlarking in Deptford. Project report*. Retrieved August 10, 2007, from <http://www.futurelab.org.uk/showcase/mudlarking>
- Swartzendruber-Putnam, D. (2000). Creating better thinkers, better writers. *The English Journal*, 90(1), 88–93. Retrieved June 28, 2009, from <http://www.lagcc.cuny.edu/CTL/dfi/dfi0607/sem0420/WrittenReflection.pdf>
- Tang, T., & McCalla, G. (2005). Smart recommendation for an evolving technology enhanced learning system: Architecture and experiment. *International Journal on E-Learning*, 4(1), 105–129.
- Tapscott, D., & Williams, A. D. (2006). *Wikinomics: How mass collaboration changes everything*. New York: B&T.
- Topping, K. J. (1998). Peer assessment between students in colleges and universities. *Review of Educational Research*, 68(3), 249–276.
- Topping, K. J., & Ehly, S. W. (2001). Peer assisted learning: A framework for consultation. *Journal of Educational and Psychological Consultation*, 12, 113–132.
- Tiffin, J. (1980). Educational television: A phoenix in Latin America? *Programmed learning and educational technology*, 17(4), 257–261.
- Trahasch, S. (2004). From peer assessment towards collaborative learning. Retrieved June 30, 2009, from <http://fie-conference.org/fie2004/papers/1256.pdf>
- Tricker, R., Sherring-Lucas, B. (2005). ISO 9001: 2000. In *Brief* (2nd ed., p. 192). Butterworth-Heinemann. ISBN 978-0-7506-6616-9.
- Trinder, K., Guiller, J., Margaryan, A., Littlejohn, A., & Nicol, D. (2008). *Learning from digital natives: Bridging formal and informal learning*. Glasgow The Higher Education Academy.
- Tulloch, J. B., & Sneed, J. R. (2000). *Quality enhancing practices in distance education: Teaching and learning*. Washington, DC: Instructional Telecommunications Council.
- UNESCO. (2002, July 1–3). *Forum on the impact of open courseware for higher education in developing countries, UNESCO, Paris: Final report*. <http://unesdoc.unesco.org/images/0012/001285/128515e.pdf>, Abruf am 2009-12-22.
- Vaill, P. B. (1996). *Learning as a way of being: Strategies for survival in a world of permanent white water*. San Francisco, CA: Jossey-Blass.
- Van Buren, M. E., & Erskine, W. (2002). *The 2002 state of the industry report – ASTD's annual review of trends in employer-provided training in the United States*. Alexandria, VA: American Society of Training and Development.
- van der Blij, M., Boon, J., van Lieshout, H., Schafer, H., & Schrijen, H. (2002). *Competentie-profielen. Over schillen en knoppen*. Utrecht: Digitale Universiteit.
- van Harmelen, F., Haase, P., & Siebes, R. (2007). Expertise-based peer selection in peer-to-peer networks. *Knowledge and Information Systems*, 15(1), 75–107.
- Varner, D., & Peck, S. (2003). Learning from learning journals: The benefits and challenges of using learning journal assignments. *Journal of Management Education*, 27(1), 52–77.
- Vince, R. (2004). *Rethinking strategic learning*. New York: Routledge.
- von Krogh, G., & Roos, J. (1996). Five claims on knowing. *European Management Journal*, 14(4), 423–426.
- Vuorikari, R., Manouselis, N., & Duval, E. (2007). *Social information retrieval in technology-enhanced learning*. Retrieved June 30, 2009, from <http://www.slideshare.net/vuorikari/whats-new-for-sir-in-tel-sirtel07-intro>

- Vuorikari, R., Manouselis, N., & Duval, E. (2009). Social information retrieval for technology enhanced learning. *Journal of Digital Information*, 10(2).
- Vygotsky, L. S. (1962). *Thought and language*. Cambridge, MA: MIT.
- Wagner, A. C. (2006). *Überlegungen zu E-learning 2.0 [Video-Podcast]*. Retrieved November 10, 2007, from <http://edufuture.de/2006/12/22/ueberlegungen-zu-elearning-20/>
- Wales, J. (2004). *Wikipedia trust metrics*. Retrieved June 30, 2009, from <http://lists.wikimedia.org/pipermail/wikipedia-l/2004-February/014339.html>
- Watkins, K., & Marsick, V. (1992). Towards a theory of informal and incidental learning. *International Journal of Lifelong Education*, 11(4), 287–300.
- Watts, D. J., & Strogatz, S. H. (1998). Collective dynamics of ‘small-world’ networks. In *Nature* (Vol. 393). Ithaca, New York: Department of Theoretical and Applied Mechanics, Kimball Hall, Cornell University.
- Weaver, W., & Cottrell, H. W. (1986). Peer evaluation: A case study. *Innovative Higher Education*, 11, 25–39.
- Weick, K. E. (1993). Sensemaking in organizations: Small structures with large consequences. In J. K. Murnighan (Ed.), *Social psychology in organizations: Advances in theory and research*. Englewood Cliffs: Prentice-Hall.
- Weinert, F. E. (1999). *Definition and selection of competencies – concepts of competence*. Munich: Max Planck Institute for Psychological Research.
- Weinert, F. E. (2001). Vergleichende Leistungsmessung in Schulen – eine umstrittene Selbstverständlichkeit. In F. E. Weinert (Ed.), *Leistungsmessungen in Schulen* (pp. 17–31). Weinheim und Basel: Beltz.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. New York: Cambridge University Press.
- Wenger, E. (2005). *Communities of practice in the 21st century organization*. Foreword to the CEFRIO guidebook downloaded from [http://www.calstat.org/learningCenter/pdfs/05-01-11\\_CEFRIO\\_foreword\\_final.pdf](http://www.calstat.org/learningCenter/pdfs/05-01-11_CEFRIO_foreword_final.pdf)
- Wenger, E., McDermott, R., & Snyder, W. (2002). *Cultivating communities of practice*. Boston, MA: Harvard Business School Press.
- Westera, W. (2001). Competences in education. A confusion of tongues. *Journal of Curriculum Studies*, 33(1), 75–88.
- White, E. (2009, January). Student perspectives of peer assessment for learning in a Public Speaking course. *Asian EFL Journal*, 33.
- Wildt, J. (2006). Kompetenz als Learning Outcome. Dortmund.
- Williams, R. (1983). *Keywords*. New York: Oxford Higher Education Institutions Press.
- Williams, J. B., & Jacobs, J. (2004). Exploring the use of blogs as learning spaces in the higher education sector. *Australasian Journal of Educational Technology*, 20(2), 232–247. <http://www.ascilite.org.au/ajet/ajet20/williams.html>
- Wirth, M. (2006). *Qualität in eLearning: Konzepte und Methoden zur Beurteilung der Qualität eLearning-gestützter Aus- und Weiterbildungsprogramme*. Paderborn: Eusl-Verlag.
- Wolf, D. P. (1988). Opening up assessment. *Educational Leadership*, 45(4), 24–29.
- Wolff, K. D. (2004). Wege zur Qualitätskultur. Die Elemente der Qualitätsentwicklung und ihre Zusammenhänge. In W. Benz, J. Kohler, & K. Landfried (Eds.), *Handbuch Qualität in Studium und Lehre* (pp. 1–20). C 2.1, Berlin.
- Woodhouse, D. (2004). The quality of quality assurance agencies. *Quality in Higher Education*, 10(2), 77–87.
- Wunsch-Vincent, S., & Vickery, G. (2007). *Participative web: User-created content*. France: Organisation for Economic Co-operation and Development (OECD).
- Yee, R. (2008). *Pro Web 2.0 Mashups: Remixing data and Web services*. New York: Apress.
- Zawacki-Richter, O. (2004). Kompetenzkapital: Ansätze des betrieblichen Kompetenzmanagements und E-Learning-Szenarien. In J. Hasebrook, O. Zawacki-Richter, & J. Erpenbeck (Eds.), *Kompetenzkapital – Verbindungen zwischen Kompetenzbilanzen und Humankapital* (pp. 237–269). Frankfurt am Main: Bankakademie Verlag.

## ***Video Sources***

- Attwell, G. (2007). *E-learning 2.0 and quality*. Pontydysgu, Retrieved December 10, 2008, from <http://blip.tv/file/328583>
- Camp, J., & Stephens, B. (2008). *Social networks and trust: NetTrust* <http://www.youtube.com/watch?v=IGBK11QBAr8>
- CWRU. (2008). Case Western Reserve University, learning 2.0. In: *Collaboration technology and engaging the campus 2008*. Retrieved June 28, 2009, from <http://www.youtube.com/watch?v=-y-s6CQoOIQ>
- Gurteen, D. (2007). *Video: Summary of peer assist*. Retrieved June 28, 2009, from <http://www.gurteen.com/gurteen/gurteen.nsf/id/peer-assist>



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